THE

Medical and Physical Journal.

VOL. XI.] MAY 1, 1804. [NO. LXIII.

Printed for R. PHILLIPS, by W. Thorne, Red Lion Court, Fleet Street, London.

A Case of inoculated Cow-Pock succeeded by a confluent Eruption of genuine Vaccine Vesicles on the LABIA PUDENDI; *occasioned by an Act of the Patient herself. Communicated by* MR. COLEY, *Surgeon in Bridgnorth.*

ON Feb. 29, 1804, I vaccinated three children of one family by inoculation. The vaccine virus was inserted into the skin of both the arms of each of them; for as they lived at a distance of nearly eight miles from my residence, I was desirous to effectually give them the disease with as little trouble to myself as possible. It so happened, that I had the virus (taken only a few days before) in a dried state, upon the points of two or three lancets, upon thread, and upon the convex side of a piece of quill. The six arms were vaccinated indiscriminately with the virus thus prepared; and each of the inoculations proved successful.

On the 8th of March I called upon these children, and observed the true vaccine vesicles formed, with a small surrounding inflammation or areola on each of the infected parts. The youngest child, a female, aged two years, which is the subject of this communication, had *scratched* the vesicles much; and I found, had been in the habit of so doing every night, and often in the day, except prevented by the woman who had the care of it. I directed measures to allay the increasing inflammation, and to prevent a repetition of this practice.

On the 12th I visited these patients, intentionally for the last time, when I found every thing had gone on well, except what I before noted respecting the habit the youngest child had acquired of scratching the inoculated parts, and which, though a good deal prevented, the nurse had not been able to interrupt; a slight fever had very perceptibly taken place in each of them; the vesicles had proceeded in the usual way, and a very extensive ery-

thematous inflammation had occurred and was still present, but evidently declining. Conceiving they had perfectly undergone the vaccine disease, I now left them; previously however giving directions as to the surgical treatment of the inoculated parts.

On the 18th of March, being six days after the last time of my seeing these children, and eighteen days from the period of their being inoculated, I was desired, somewhat hastily, to go to examine the youngest of these subjects, who was represented to be very ill with a fever, retention of urine, a swelling of the labia pudendi, and a breaking out over all these parts. Surprised at such a representation of symptoms, I went immediately to see this child; and indeed, was not a little astonished at the appearances I had to observe, which were as follow: The labia pudendi were each of them swollen to a very great size, and exquisitely tender and inflamed; on the inside of each was a very considerably diffused pustular eruption of the *confluent* kind, many of the vesicles, as they doubtless were originally, having spread and run into each other, so as to form one continuous eruption, which was observable on separating the labia to go as far as the eye could perceive; on the fore parts of each labium were three or four very distinct and well formed *circular* pustules, evidently of the genuine vacciolous kind—so well marked, that no person who had ever been in the habit of seeing vaccine vesicles could possibly have mistaken them for any other; though this was not observed by the nurse, or the parents, or many others who had occasionally seen the child. The dysury, or pain of urining, was so distressing, that for many days they had not been able to prevail upon the child to pass its urine oftener than once a day. It had been costive, and there was a smart fever then present, and had been, as the attendants informed me, for some days.

Having thus sufficiently ascertained the state of the case, and being convinced in my own mind that the eruption was truly vacciolous, however it might have been occasioned; I thought it right to inquire with as much minuteness as possible into all the circumstances that were likely to throw any light on so important an anomaly of the disease: for if the system were occasionally, or under circumstances not previously discernible, liable to a secondary fever as the small-pox is, and moreover with that a confluent vacciolous eruption, such occasional occurrences, it is evident, would operate much against the new practice,

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practice, or tend ultimately to bring it into discredit. On inquiry how and when this disease of the pudenda was first discerned? the nurse very readily answered, that it had been discovered so long back as the time of my last visit, which was on the 12th (six days since); but as there was then only a little pustule or two, she did not think it worth mentioning; that what led to the discovery was her observing the child often rubbing and putting its fingers to those parts. When she first examined the pudenda, the child had then scratched so much as to make the part bleed. From the 12th to this period many fresh vesicles had formed; and lately she observed that they had run into one another, so as to make one continuous irregularly shaped eruption, occupying the whole of the inside of the labia, and proceeding inwards as far as she could see. The nurse and the parents expecting this eruption would have gone off, made no application for earlier assistance, nor did it appear that any thing had been locally used.

I at this time disguised my opinion of what the disease was; and prescribed such applications and medicine as the state of the case seemed to require.

Now, as to the cause or occasion of this secondary eruption and fever, I think it cannot fail being evident to any discerning practitioner, that the whole of these symptoms were brought on by a second, or perhaps many repeated inoculations of the parts mentioned, by the fingers of the child itself, who, it has been observed, through the whole progress of the disease, was constantly in the habit of scratching the inoculated parts of the arms; and with the nails thus infected with fresh vaccine fluid, and applied, as it evidently was, by scratching to such an extent as to produce an abrasion of the cuticle, and on parts too that are most numerously supplied with lymphatics, it cannot be wondered at that the consequence should be such as the symptoms described. I shall not determine so positively, whether the fever were strictly vacciolous, as I have not before seen any case of confluent vacciola; but as the fever, or febricula, that accompanies the inoculated cow-pock is uniformly of a very transitory duration, hardly indeed the fever of a day, it very probably was not truly a vacciolous fever, but a symptomatic fever arising from local irritation, inflammation, and pain of those parts.

On the 22d, the fever was entirely removed. The confluent pustules, from the applications of poultices and a saturnine lotion, were wholly separated, leaving the parts nearly healed and quite clean. The parts that had been

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occupied by the distinct pustules were entirely healed; very superficial cicatrices remaining. In a few days after this I had the pleasure to leave the child in perfect health.

To this case, which in the present state of our knowledge of the Cow-pock I have thought right to lay before the public, I shall not subjoin any remarks; the facts stated are sufficiently clear, and the practical inference to be drawn from them is such as a medical practitioner cannot avoid noticing.

Query. Is it probable that some of the anomalous cases of the cow-pock, those accompanied with eruptions on parts not by the vaccinator inoculated, may have been occasioned by a similar cause?

April, 1804.

To the Editors of the Medical and Physical Journal.

Gentlemen,

THE treatment of gun-shot wounds is a subject of great importance, and well merits the serious attention of the Faculty; and in a peculiar manner that of the younger branches of the profession, who intend dedicating their early years to the service of their country, which during war never fails to present a wide field for improvement, whether their views are directed to the navy or army. The deprivation and sacrifices of numberless comforts will be fully compensated by the opportunities they will have, of giving the finishing stroke to their education, if extensive experience can add any thing to therapeutic and prophylactic skill. It is greatly to be lamented that most of the authors who have written on this subject, never saw a shot fired in anger; and from their want of personal experience, are very inadequate to the task they have assumed, of giving lessons of instruction on topics the most serious and important, for such they must ever be considered, where the lives of British heroes are in the hands of men whose ideas of treatment have been borrowed from those productions. Would not the tear of sorrow, and the heart rending sigh, burst forth, if we were told that a Wolfe or an Abercrombie was lost to his country from maltreatment? Then, how careful the student ought to be in his

choice

choice of authors. I am of opinion that Mr. John Bell's discourses on the treatment and nature of wounds should form a part of every Surgeon's library; he writes like a man who has been engaged in scenes of war, or one whose hospital practice has enabled him to treat the subject in a masterly manner. I have been informed that he derived a considerable part of his knowledge from visiting the ships under the command of Lord Duncan, subsequent to the victory he obtained over the Dutch fleet; but on examining the title page of his book, I find it was published before that action took place: however, his visiting the wounded is a proof that he has been assiduous in obtaining information on the subject.

A few cursory remarks are all I shall presume to offer, in my endeavours to point out to the young surgeon, that plan of treatment which experience teaches is most likely to crown his endeavours with success. To think of laying down rules which are never to be deviated from, would be the most consummate folly and presumption; for much must ever be left to the ingenuity and prompt decision of the surgeon. If not, from whence would our most noble improvements proceed?

The wounds in a naval engagement are generally from cannon shot, and consequently much more dreadful than those of the musket; and often in proportion to the extent of the wound may the danger be estimated. The men who nearly compose the aggregate of a ship's company, are from their peculiar modes and habits of life, such as cannot boast of the best of constitutions; and many of them are tainted with the scurvy, a disease which formerly made great havock in the service; but the liberality of government has for years provided a remedy (lemon juice) which has nearly eradicated this scourge of sailors.

Then the treatment of a wounded seaman is briefly this, which may in almost every case be equally applicable to a soldier. In flesh wounds, or where there is only a loss of muscular substance, the wound must be well cleaned with a sponge moistened with water; the hæmorrhage stopped, if issuing from the mouth of a large vessel; and the tourniquet must be applied and properly managed, until the vessel is taken up, which is to be done by means of the tenaculum or forceps, taking care not to include any of the cellular membrane with which it is surrounded. If it cannot be secured in this manner, a needle must be passed round it, including as little of the surrounding parts as possible. Your success in saving the life of your

 patient,

patient, and performing a speedy cure, will greatly depend upon your dexterity in securing the vessels, which I shall elucidate by relating to you the case of a man, wounded at the battle of Copenhagen, who was placed under my care at Yarmouth hospital, together with nearly the whole of those who had lost their limbs. This person had his arm amputated at the insertion of the deltoid muscle; the operation appeared to have been performed in a very proper manner, so much so, that the face of the stump was perfectly covered with the integuments, and at the time he was received it was nearly cicatrized. That part where the brachial artery hung from being still open, proved a source of great distress to the patient, for every time it was touched, with a view of disengaging it, the sensation arising from a slight pull, somewhat resembled an electrical shock; which clearly evinced that a nerve had been included in the ligature: and it nearly cost the patient his life, for violent inflammation took place, pervading the whole of the stump, extending itself to the axilla, breast, and back. The parts were wrapped up with emollient poultices; and by the aid of fomentations, it terminated in suppuration, so extensive, that had he not been well supported with beef tea, wine, porter, decoct. cinchonæ, &c. he must have sunk under it.

It is surprising how this man escaped that fatal complaint, locked jaw; but so various and inexplicable are the springs which actuate Nature, that the prognosis of the most skilful is often erroneous.

Should the bleeding flow from every point of the wound, you may suspect that your patient is of a scorbutic diathesis; that the crassamentum of the blood is broke down by this or some other disease. In this case you are to cover the wound with lint, and by graduated tow compresses and rollers secure it; taking care not to remove the dressings until it begins to suppurate. In such a case, the inflammation will be purely local, and a generous regimen may be resorted to immediately; for in these cases, where there is a great loss of substance, the discharge is always profuse; and if your patient's strength is not kept up by strong soups, jellies, and such things as will restore lost stamina, he will sink into a low nervous fever, and die.

Here I must caution you against giving the bark in substance, for those who have been so profuse in their encomiums on this *drug*, in this state, have much to answer for. If the surgeon is not blinded by prejudice, he will discover his patient losing his appetite, and becoming more and

and more debilitated every hour, whilst he is pouring in large libations of this *ne plus ultra* medicine. Believe me, more is to be done by diet. In these cases, make up your mind never to give it except in decoction; a little of the tincture may be added, and the mixture acidulated with acid. vitriol. Such medicine, given in moderation, will assist the digestive powers, but the bark in substance clogs up the stomach, checks the secretion of the gastric juice, and totally unhinges it, rendering all its efforts to convert the food into chyme useless and abortive. The stomach is an organ endued with such sensibility, that it always sympathizes with the injuries which the body sustains; and to give bark in substance, under such circumstances, is productive of a train of symptoms the most distressing, viz. pyrexia, vomiting, &c. Such symptoms may occasionally arise from the injury itself; but I am fully convinced they are most frequently the effects of this highly irritating and nauseous drug.

In flesh wounds bleeding is seldom necessary, and is generally productive of the worst of evils, for it often happens that men in action are quite exhausted, from loss of blood, before the surgeon can attend to them; a well directed broadside makes so much havock, that a third of the wounded die from want of medical assistance. Allowing that a man should lose very little blood before his wounds were secured; if they were extensive the discharge from them during the cure would reduce him too much, even admitt[illegible]g that every thing comfortable and nourishing was at his command, which is not always the case; so you perceive, how absolutely requisite it will be for you to guard against bleeding, or any other evacuation that may tend to debilitate your patient, for local inflammation will generally yield to local applications, such as emollient poultices and fomentations; and in these applications great judgment is requisite to know the precise point where to discontinue them. It frequently happens that the skin takes on a diseased action, assuming an erysipelatous appearance, at the time the wound is discharging very profusely; in such a case, cold applications to the surrounding inflammation will be proper, namely, a weak solution of cerussa acetata, renewing rags dipped in it as often as they grow warm. By this means the temperature of the part will be reduced, and the patient relieved from considerable pain, the natural concomitant of inflammation.

The best diet, when the strength is sinking under profuse gleetings, is animal food, in the shape of jellies. As

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the stomach should be distressed as little as possible by the process of digestion, if sufficient nutriment cannot be conveyed into the system in this manner, it may be thrown into the intestines per anum, with a few drops of laúdanum. Many a valuable life has been saved in this manner. When the granulations have arrived at the point when bleeding and fungous flesh make their appearance, the pressure of the roller and compresses should be increased, which will greatly facilitate the healing process, and enable you to cicatrize the wound, without having recourse to escharotics, so frequently used by the surgeons of the old school.

With respect to wounds of the hands, feet, and limbs, accompanied with fracture and splintered bones, it is highly requisite for you to be possessed of intrepidity, tempered with coolness; for what you decide upon, must be exerted without delay, and you will be careful never to amputate without circumstances render it absolutely necessary; every surgeon possessed of anatomical knowledge, can quickly determine. If you find the nerves and tendons injured, the muscles much lacerated, and spicula drove into the very heart of a limb, with or without much hæmorrhage, in such a case amputate immediately; and here permit me to remark, your fore finger will make the best probe, for you must use it to ascertain with precision the extent of the injury.

In wounds of less magnitude, when there is a probability of saving the limb, by using your [illegible] finger and thumb, you will be enabled to pick away every particle of bone, for the smallest atom, if felt, must not be left behind, and you must recollect that this is your only time for cleansing the wound from every foreign body; to leave any thing unfinished now, and attempt it when inflammation and tension had taken place, would be extremely cruel, and subject your patient to inexpressible torture. It will be frequently necessary for you to use a knife in detaching splinters, and if you cannot disengage them without enlarging the wound, do it boldly; it is better that you should risk dividing an artery, than to lose your patient by trismus, which is often occasioned through the irritation of splinters

Wounds of this description often mortify; you may say, if there is any likelihood of such an occurrence, it will be most prudent always to amputate. Such reasoning is erroneous; it is a common thing for stumps to become sphacelous, an evil originating sometimes from crowding the

the wounded together, and frequently from a cachectic state of the body, independent of external causes; therefore, when this occurs, little judgment will determine, whether a small or large surface is most likely to terminate favorably; and in this dilemma, it affords me infinite pleasure to be enabled to direct you to the choice of a medicine which merits the highest encomiums, namely, nitre, finely pulverized, sprinkled all over the part, completely covering it at every dressing, which will as surely stop its progress as mercury will that of the lues venerea; and if the fœtor is ever so disagreeable, it will, in the space of twelve hours, entirely subdue it. You must not neglect to wash the part with vinegar and decoct. cinchonæ, administering the latter internally with port wine, supporting the strength with strong jellies, as directed above.

When a limb is carried away with a shot, or splinter, you must go through the regular plan of amputation, performing your operation at a distance from the wound, to leave integuments for covering the face of the stump. If the limb is too much shortened to admit of amputation, the flap operation of the hip or shoulder must be performed. A marine, who had his arm blown off with a shot at the battle of Copenhagen, near the shoulder, was placed under my care at the naval hospital in Yarmouth. The surgeon of the ship he belonged to, having many men wounded, and being in want of assistants, (which I am sorry to say is too often the case in the Navy) was constrained content himself by securing the vessels, and dressing up in the state he received him in the cockpit. It soon became, from the retraction of the muscles and integuments, a complete sugar loaf stump, and his cure bore some resemblance to a resurrection, for he had to contend with every dangerous and unpleasant symptom; he was reduced to a mere skeleton by the discharge.—During the cure he was seized with tetanus and trismus, and laboured under these complaints longer than ever I knew any man in such a state. The wound was dresed with lint dipped in laudanum; opium and æther were prescribed liberally, and the cure perfected by decoct. cinchonæ, wine, nourishing jellies, &c. but not until an exfoliation of nearly the whole of the remaining bone came away. It is worthy of remark that, generally speaking, all the operations of the surgeons in that action were well performed, though in a cockpit with candle-light, and would have done honour to any one on shore, with the advantage of plenty of assistants and day-light, unannoyed

ed with the cries of the wounded, din of battle, and roaring of cannon.

But there was one exception; and this old surgeon, being probably nervous, forgetting to keep an eye on the edge of his knife, and not saving a sufficiency of integuments, some of his patients were detained in the hospital, three, four, or five months, on account of exfoliations. When there is not a sufficient covering left for the bone, the cure will be greatly expedited by using tight rollers, which prevent retraction.

The appearance of the countenance will greatly assist you in forming your prognosis; if the patient is of a florid, clear, and healthy appearance, you may augur favorably; but if he is of a swarthy, sallow, cadaverous aspect, your hopes will not be animating; such patients will bear a greater proportion of wine than the former, for whose recovery ale or porter will be most conducive. When circumstances will admit of it, take care to keep the wounded at a considerable distance from each other, and if any of the stumps or wounds look flabby or ill conditioned, do your utmost to obtain their removal, and total separation from the rest; the poisonous effluvia emanating from a single patient may infect the whole, therefore the good of the poor sufferers, as well as a regard for your own reputation, will stimulate you to exert every nerve in their behalf.

Fumigating the apartments of the wounded, wherever there are a number collected together, with nitrous vapours, according to Dr. Carmichael Smyth's plan, is of infinite service in correcting fœtor, and subduing contagion.

Wounds of the thorax and abdomen require a very different treatment, the antiphlogistic regimen must be strictly observed; you are to use the lancet freely, according to the urgency of the symptoms. Though these wounds often prove fatal, you are never to despair of success; many instances of recovery from balls perforating the lungs can be adduced, some of which I have witnessed myself. I have often thought that the tinct. digitalis, a medicine which stands high in my estimation, might in some measure supersede the necessity of bleeding so profusely; if given in sufficient quantities, it will check the impetus of the blood, by lessening arterial action, and thereby give the ruptured vessels and lungs an opportunity of healing, without impoverishing the body so much as is generally done. I have experienced its good effects in pulmonary inflammations, arising from other causes, and doubt

doubt not of its efficacy in cases where similar symptoms originate from wounds.

Wounds of the joints are always dangerous, and when the capsular ligament is perforated, and the heads of the bones fractured or otherwise injured, the safest plan will be to amputate. The loss of a limb must ever be considered a great deprivation, and when the injury received does not appear very extensive, the entreaties of the patient prevail on the surgeon to attempt the cure; the latter sympathizes with him, and from a supposition that there is a chance of a favorable issue, he remains passive, but seldom has the happiness of bringing him off, even with an anchylosed joint. Bleeding has been carried to great lengths in such cases, and I believe great mischief has been done by erring on what may be considered the safe side, for local inflammation will be more readily subdued by means of leeches, and the cold saturnine lotion. How often do we perceive marks of inflammation, when the pulse is weak and feeble, when the flesh is wasted, and strength exhausted? Much more might be said, but I am afraid I have encroached too much on the limits of your publication. I shall conclude by craving your indulgence for the insertion of the following remarks.

No class of men whatever have rendered their country more essential benefit than naval surgeons; yet strange to tell, they are not remunerated for their services, as well as their brethren in the army. This is a circumstance not known to the bulk of the nation, but it is too true; and it is to be hoped that a noble Lord will exert himself as much in their behalf, as a noble Duke has done for those in the army; very little addition has been made to their emoluments since the days of Queen Anne! This is a subject of more national import than may be imagined at first sight. The reason why the army is better supplied with surgeons than the navy, is very obvious; their pay and treatment is better, and when the nature of their respective services is duly estimated, taking into consideration the deprivations and sufferings of both parties, there can be no difficulty in deciding which of them ought to receive the most ample and handsome compensation. Every admiral and captain in the service last war, had to lament the want of medical men; and it is well known that many a brave fellow (whose useful life might have been saved to his country) bled to death from the same cause. The modesty and forbearance of the medical department in the navy, have operated to their disadvantage, otherwise their complaints

plaints would have become the subject of parliamentary discussion; and as there are naval characters in both houses, who know how to appreciate the merits of naval surgeons, it is to be hoped they will soon receive merces laborum. I am, &c.

Romsey, April 21, 1804. RALPH CUMING.

CASE OF ANEURISM; *by* DR. JOSHUA E. WHITE, *of Waynesborough, in America.*

ON Thursday, May 23, 1799, I was requested to visit Mrs. P. aged fifty-five years, living a few miles from this place, who, since Christmas last, had been troubled with a tumour under the upper part of the sternum, which her friends supposed to be what is commonly called a wen, and for the extirpation of which I was called. During the last three weeks the swelling had increased rapidly in size. The integuments were much distended; the cutis had changed colour, and become of a very deep red. Upon examination I found it to be immoveable, of a firm consistence, and the surface smooth and equal. Throughout the whole of it a strong and violent pulsation was to be felt, which was evident to the sight at the distance of several feet. Its nature, unfortunately for the patient, was too evident, and I did not hesitate to pronounce it to be an aneurism. The patient suffered much pain, not only from the tension of the skin, but from its weight. She could not lie down with any tolerable ease, and she had shooting pains in different parts of her breast. The tumour was about ten inches in circumference round the base, and the contents could not be made to recede the least upon pressure. A few days previous to my seeing her, two small punctures had been made in the anterior part of the swelling, at her request, upon the supposition of its being an abscess, and with a view of discharging its contents. Neither of them penetrated the aneurismal sac, though one of them divided the external coat of the artery; for at every diastole of the heart, the thin internal coat (which might here be emphatically called the "thread of life,") was evidently pushed forward, and seemed every moment ready to yield to the *vis á tergo*. The discharge of blood from the vessels of the skin afforded her considerable relief from pain and tension.

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The patient could not trace the origin of the tumour to any certain cause: hence it most probably arose from a partial weakness of the aorta. She had been for many years affected with the chronic rheumatism. About twelve months before the present tumour made its appearance, a smaller one had discovered itself in the same place; but which, in a short time disappeared, without any application. With the complicated distress of pain, restless nights, and unpleasant forebodings, the patient was anxious for relief, and entreated me to do something towards it. For the removal of the tumour, no remedies, I told her, could be applied; and her friends were made acquainted with its nature, and the inevitably result. To support it against the violent impulse of the blood, I advised a covering of thin sheet lead; rest was strongly enjoined, and anodynes were occasionally directed. Expecting the tumour would soon burst, and prove instantly fatal, I left her. This event took place in a week. The discharge of blood was so enormous and sudden, that the by-standers compared it to its being "poured from a pail suddenly turned upside down." The orifice was about the size of a dollar. She expired without a groan, and in an instant. Permission could not be gained to open the body. Thus we are left in ignorance as to the effects produced upon the lungs, &c. There was an evident separation of the clavicles from the sternum (most probably from an absorption of their substance), and this last was considerably elevated. The hardness which I have noticed most, probably arose from a deposition of matter which sometimes takes place round an aneurismal sac, and which, in some instances, has been known to approximate to a cartilaginous or osseous nature. The person who made the punctures said, "it cut like gristle."

That the action of an artery should be able to produce such a derangement or loss of substance as appeared to be evident in this case, not only in the clavicles, but also in the sternum and ends of the ribs, may, at first view, appear surprising; but our wonder will cease when we know that the most violent effects are sometimes produced upon bones, as well as the softer parts, by the pulsation of a large artery in an aneurism; that the former may be, and often are, separated from their joints, elevated or displaced from their natural situation, and sometimes entirely dissolved.

On the Plants *from which the* Elastic Resin *is obtained.*

By Prof. Willdenow.

(With Two coloured Engravings.)

THE remarkable substance known by the name of elastic resin or caoutchouc is imported to us in great quantities from South America in various forms, generally in the shape of bottles, and it is employed in Europe for several medical and chirurgical purposes, for making catheters, trusses, syringes, &c. and also for rubbing out black pencil marks. It was long known to be a vegetable production, and the inspissated juice of a tree, but it was a long time before this was botanically examined. Linnæus thought the elastic gum to be prepared from a tree to which he gave the name of cecropia peltata, and he firmly believed that this was the only tree from which that substance was obtained. It has however since been ascertained by modern botanists, that there are several trees which yield elastic resin, but especially, that the caoutchouc which is imported into Europe, is never taken from cecropia peltata, but from a far different plant. It appears moreover from the researches of modern chemists, that this substance is likewise contained in several European plants, namely, in the berries of viscum album, though it is never to be met with in any European plant in so pure a state as it is observed in several trees of hot climates. The younger Linnæus takes the Jatropha elastica to be the true elastic resin tree, which he learned from Aublet's work (Histoire des Plantes de la Gujane Française, tom. 335, p. 871) who found this tree only with fruit; and Linnæus concluded from the form of the latter, that the elastic gum tree which Aublet calls hevea gujanensis, belonged to the genus Jatropha. Prof. Richard however discovered the same tree during his travels in Gujana, in flower, and at the same time with fruit, and from his accurate examination of both, it appeared to make a new genus which is now called Siphonia. Mr. Richard found but one species which bears the systematic name of Siphonia cahuchu, of which a branch is represented in Fig. 1, on a smaller scale, from a specimen in my collection. Siphonia cahuchu, (Siphonia Elastica, Woodville, Medical Botany, tom. 4) belongs to the Linnæan class of Monœnia, Monadelphia. It is a large tree, growing to the height of sixty feet and more; the bark of the branches is smooth and grey-brown. Leaves on

on long foot-stalks, and very close together. Leaflets half a foot long, elliptical, pointed, entire, coriaceous, on the upper side smooth and on the under side whitish, with very short, fine, and close hairs. From the axilla of the leaves arises a panicula of small white flowers, longer than the leaves. Male flowers have a monopetalous, campanulate calyx, which is five-cleft. Corolla none. Filaments in a column with five ovate antheræ. Female flowers cleft in teeth which are recurved and deciduous; germen roundish and a little conoid, style none, stigmata three, emarginated, depressed, capsule woody, three-parted, three-celled, in each cell one seed of the size of a sweet almond, elliptical, spotted, and covered with a thin and brittle epidermis. The seeds are said to be eagerly sought for by the Americans and to be a very palatable food. The manner of obtaining elastic resin from this tree is by making incisions in the trunk of the tree, from which a milky juice issues which is received into earthen vessels. On exposure to the air this juice gradually inspissates into the known elastic resin. In America it is employed for different purposes, and they make of it bottles, boots, flambeaux, &c.

Besides this tree, which is now pretty well ascertained, another has been discovered in the Isle of Madagascar, yielding a substance which perfectly resembles that of the Siphonia, and said to be obtained by similar proceedings; and it is to be expected, that several other lactescent trees of warm climates may produce such a substance. This tree is called by Mr. Jacquin, Commiphora Madagascarensis. On tab. 2, *(a)* a branch with flowers is represented in natural magnitude; and in *(b)* a branch with leaves lessened by half. It belongs to the class of Diœcia, and the male flowers are only as yet known. Mr. Jacquin gives of it the following description.—The branches are round, covered with a yellowish bark which adheres loosely, leaves oblong, blunt, finely serrated, having at their base two small foliaceous appendices. Flowers yellowish, small, appearing before the eruption of the leaves; they are deciduous. Calyx bell shaped, cleft into four short teeth. Corolla, consisting of four lanceolate petals which surround eight subuliform filaments, four of which are shorter than the rest. Antheræ erect and oblong. Pistillum and fruit unknown.

To

To the Editors of the Medical and Physical Journal.

GENTLEMEN,

HAVING received from several medical gentlemen, (particularly in London) specimens of barks enclosed in franks, of what was sold to them as the real *cortex salicis latifoliæ*,* and finding these to be no other than the common species used by basket-makers; I have deemed it highly necessary, to prevent imposition in future, to send to the different professors, lecturers, and teachers in London and Edinburgh,† specimens of the real bark, and the leaves of the tree, accompanied by the following circular letter.

"Sir,

"IF you are disposed to notice to your pupils, the *cortex salicis latifolia*, I have sent you a specimen of the bark and leaves of the tree for that purpose. This is the more necessary, as the want of this information renders those who wish to try its effects liable to be imposed on by the vendors; who either may not know it, or, what is worse, sell other sorts in its stead, thereby bringing into disrepute a valuable indigenous substitute for the *cinchona*.

I am, &c.

G. WILKINSON."

Sunderland, February 13, 1804.

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* The only genuine bark I can find in London, where I was in the month of June last, was at Gordon's herb shop, Newgate Market.

† Specimens have been sent to the Medical Schools of St. Bartholomew, St. Thomas, and the London Hospitals; to Drs. Pearson, Batty, Clark, Dennison, and Squires; Messrs. Brookes, Wilson, Thomas, Carlisle, &c. in London. To Drs. Monro, Gregory, Duncan, Hope, Home, Hamilton, Rutherford, and Mr. James Russel, Edinburgh.

A CASE

A Case of Hydrocephalus Internus; *communicated by* Michael Bartlett, *Member of the Royal College of Surgeons, London, and Apothecary to the Finsbury Dispensary.*

JAMES WILSON, a boy about eight years of age, became a patient of mine the 19th of June last, for hydrocephalus internus, not with any view towards a cure, but merely to palliate present symptoms; at this time the head was so considerably enlarged, that he could not raise it from the pillow without the assistance of his friends; he had lost the power of speech, and the pain in the head was so excruciating that he would scream for hours at a time, until quite exhausted, when he would sink into a kind of lethargic state, scarcely appearing to breathe.

The account his father gave me of the progress of his complaint previously to my seeing him is as follows. His mother had a very difficult labour with him, (which Mr. Farley, the gentleman who attended her, accounted for by observing that the head was unusually large.) The child grew and was healthy until about sixteen months old, when he was seized with the hooping cough, and that in so violent a degree, that he lost his sight and strength, and became entirely helpless. Mr. F. was requested to see the child, who, after examining the head with some attention, declared it to be hydrocephalus internus. From this time the head continued gradually to enlarge, but the child regained his sight and strength, so as to be enabled to walk with the assistance of his father's hand, or in a go-cart, and that for two hours at the time. His appetite and evacuations were regular; he was lively, and what is very remarkable, notwithstanding the great injury that was done to so delicate an organ as the brain, he retained the sentient faculty, in a manner truly astonishing; for he would reason with his parents (who were of a religious turn of mind) upon the immortality of the soul, and put such questions to them as, to use his father's expression, both astonished and alarmed them. His memory was so retentive, that he would quote passages from scripture which he had heard a year before, and repeat a whole page verbatim, that had been read to him. The remedies made use of (for he had been under a variety of practitioners) were those usually employed upon these occasions, such as blisters, drastic purges, ung. hydr. fort. &c. without any

any material alteration or benefit to his complaint. A short time previous to my seeing him, the gentleman who attended had ordered his head to be shaved, and some warm stimulating oils to be rubbed on, such as ol. origani, &c. with a view to ease the pain; and what is worthy observation, immediately after one of these rubbings, he lost his speech entirely (which he had not done before) and never regained it after. From the time I first saw him until his death, which happened the 15th of October following, he remained much in the same state, sensible but speechless, vision imperfect but not obliterated, as he could distinguish objects of moderate magnitude.

Phenomena that appeared on Dissection.

The skull very thin and transparent, not being thicker than a shilling in some parts. Sutures closely united. The vessels upon the dura mater rather turgid, but that membrane did not adhere to the cranium so firm as is usual at that age. Longitudinal sinus natural. Upon raising the dura mater, the convoluted appearance of the brain was lost for a smoother surface, and the vessels of the pia mater lying upon that surface. The cerebrum had a very flaccid feel, and the undulating motion of the water was evident through it; it was necessary before cutting through the falciform process of the dura mater to support the depending part of the brain, upon attempting to remove the upper part of the right hemisphere. Although the incision was made two inches above the corpus callosum obliquely upwards and outwards, it opened the right lateral ventricle, and part of the water escaped. From the under side of the corpus callosum, about two inches above the upper side of the fornix, the two lamina of the septum lucidum were distinctly seen, and the handle of the knife could with ease be passed between them. The membrane was quite transparent; the communication of the two lateral ventricals was at the posterior part. The water of a light straw colour, and about *thirty-two ounces* in quantity. No appearance of inflammation upon the membrane lining the ventricles; the communication to the third ventricle considerably enlarged, as was that cavity. The internal surface of the cerebellum natural, but at the posterior part a pellucid membrane appeared, under which was contained about eight ounces of water of a much darker colour than that in the lateral ventricles; this was contained in a cyst immediately under the tentorium, and had no outlet or

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communication with the fourth ventricle whatever.* The optic nerves were smaller, softer, and of a browner colour than natural. The other nerves were natural.

On the Nature and Cure of the Complaint.

From the history of this case it does appear, that the disease existed at birth, a circumstance which I conceive generally, if not *always*, to take place, as hydrocephalus is decidedly, in my opinion, a modification of scrophula, proceeding from stamina originally debilitated and relaxed. Admitting this to be the case, ought we not to pay a more strict regard to the original state of the constitution, and by prescribing such remedies (in addition to topical ones) as are most likely to restore the vigour and tone of the constitution, strike at the root of the disease: such as country air, sea bathing, nourishing diet, &c.? Ferrum præp. is a most excellent medicine for children of weak and relaxed habits, given in doses of from three to six grains two or three times a day. Superficial symptoms are too much attended to in practice, while the more important, the actual and existing state of the constitution, is too often neglected; the strength or the weakness of the patient is a grand point to be attended to in the treatment of every disorder, however different in their symptoms and appearances. To quote the words of a monthly medical reporter: "Notwithstanding a considerable diversity in their shapes and complexion, there exist in strictness of fact, only *two families* of disease. The one, the offspring of debility; the other owing its immediate origin to a state of undue mental or physical excitement. This simple doctrine, first started and promulgated by the celebrated Brown, throws upon the obscure region of medical science a beam of light, which upon almost every possible occurrence or supposable emergency may securely guide the judgment and conduct of an experienced, careful, and discriminating practitioner."†

St. John's Square, March 23, 1804.

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* This cyst is in the possession of my friend, Mr. Taunton, of Paternoster Row, a gentleman to whom I have been on various occasions obliged for important information, and who by his persevering zeal in anatomical research, promises to be no small contributor to the promotion of professional science.

† See Dr. Reid's Account of Diseases, Monthly Magazine for July, 1803.

Frederick Hoffman's Essay *on the Dissimilarity of* Fixed Vegetable Alkaline Salts, *with Observations and Remarks on the Changes which the Septic Acid undergoes by Combination with those Alkalies, by Dr.* Mitchill.

It has been repeatedly objected to me, that the *nitrous* acid of the shops does not correspond with the character which I find to be possessed by the *septic* acid. It is true that, in some of my early essays, published during the years 1795 and onward to 1798, I did employ the term "nitrous" as a sort of synonime to the word "septic:" but then I always enclosed it within a parenthesis, and my object was to lead the mind towards that acid as having a radical similitude with the one I was describing, though without any intention of affirming their identity. I now find that this has been misconstrued, and that some persons understand me as having affirmed that the nitrous and septic acids were so exactly alike, that what was true of one was in all respects true of the other.

Now, this is a serious mistake in me, if ever I said so, or in others, if they have ascribed to me what I did not say. In 1796 (see Med. Rep. vol. ii. p. 235—240) I stated this difference, as I thought, very plainly, and at considerable length. I repeated this sentiment, with some variation of statement, in 1797 (ibid. vol. i. p. 217.) To these I added a number of other considerations in 1799 (ibid. vol. iii. p. 14 & seq.), showing the dissimilitude of these two acid products. More was offered on this point in 1801 (ibid. vol. iv. p. 184-5), exhibiting still further the difference between the acid formed among corrupting materials, and the acid obtained by decomposition of salt-petre. In the same volume, p. 190 and 262, there are other views of this question, intended to put my meaning out of doubt.

That part of the history of putrefaction which I have attempted to explore, and to which I have called the attention of the learned world, *is the series of phenomena which occur from the moment of the formation of septic acid by any of the processes which produce it, to the fixation or neutralization of it by pot-ash.* My attention was directed to this period, because it had been overlooked by almost every observer, as it yet is by the greater part of scientific men; although it certainly embraces the most important portion of the facts connected with animal and vegetable disorganization. The history of the *nitrous acid had, I well knew*

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from the beginning, been laboriously and profoundly explored. With that I professed to have little to do, but employed myself chiefly in investigating the character and operation of *the acid of septon,* before it underwent the alteration which gives it the qualities possessed by the *nitrous.*

Still it is taken for granted by the philosophers of our day, that the acid obtained by decomposition and distillation of salt-petre is the very same and identical thing which was formed in the midst of corruption, and among putrefying materials, by a chemical combination of septon and oxygen. This is as confidently asserted by them as if it was a matter of fact. Indeed, it is so absolutely credited and taken for granted, that the *natural history* of the acid, from the time of its formation to the time of its association with pot-ash (which is the most interesting by a great difference), has been almost wholly overlooked; while its *artificial history,* after its separation from pot-ash (by far less important), has attracted an uncommon share of attention.

But men of science did not always confound things at this rate. There was a time when opinions were stated as such, and not obtruded upon the world roundly and positively for realities.

Fourscore years ago the German chemists knew that salt-petre, formed from *distilled nitrous* acid and pot-ash, by synthesis, in a laboratory, differed from the neutral salt produced when septic acid combined with that alkali by the natural process, in heaps of dung and rubbish. Ludwig had remarked, that notwithstanding all attempts to saturate them exactly, there would be some acrimony left in this *nitrum regeneratum;* to correct which a portion of quick-lime must be added.

The difference between natural salt-petre and regenerated salt-petre was so considerable, that the latter was by some affirmed to be unfit for making gun-powder. It was declared to have too little strength for that purpose. Others, however, were of a different sentiment, and declared *regenerated* nitre as good as the *natural.* (Junckeri Conspectus Chemiæ, tab. lxi.)

Stahl knew the destructibility of pot-ash: for when salt-petre was exposed to a torturing fire, for a long time, in an open vessel, it was wholly dissipated; both the acid and alkali disappearing. And he also knew, that if a mixture of salt-petre and charcoal was deflagrated in a tubulated retort, that both the acid and the alkali would be destroy-

ed or decompounded; scarcely a vestige of pot-ash being found in the retort, or of nitrous acid in the receiver.

Kunkel too has ascertained, by experiment, that putrefying blood afforded both septic acid and fixed alkali enough to form salt-petre. From one hundred pounds of corrupted blood, he obtained, by evaporation and crystallization, more than five pounds of genuine nitre. Juncker himself was perfectly aware of the convertibility of alkaline salt to nitre, by exposure to fœtid exhalations.

When an alkaline salt has been exposed too long to intense fire, the watery parts are expelled, and the salt itself degenerates to an earthy, fixed, and insipid consistence.

The following curious fact is told of the convertibility of nitrous acid into pot-ash:—If the alkali, in its dryest state, is mixed with spirit of nitre, and turned to *nitrum regeneratum*, and afterwards, by aid of charcoal in close vessels, this factitious salt-petre is decomposed and turned back to *nitrum fixum*, or pot-ash, there will be found remaining a much larger quantity than was originally made use of. They both contain septon, and their constitution is probably more nearly allied in many particulars than is usually supposed.

It is the vulgar opinion that acids and alkalies are the opposites of nature, because of the effervescence they make on uniting, &c. but the Stahlians were of a different belief, thinking that their readiness to combine with each other indicated rather a similarity of constitution and a homogeneity of corpuscules. (Juncker. Consp. tab. vii.)

There is something uncommonly singular in the limestone caverns which furnish the salt-petre earths in Virginia, North-Carolina, and Tennesse. These excavations are composed altogether of rocky strata of calcareous earth, or carbonat of lime. They extend for considerable distances towards the centre of the mountain in whose sides they exist. Neither rain nor sun-shine ever reaches them. In the bottom of them a salt-petre earth is found, which, after lixiviation, if carried back and replaced, becomes gradually impregnated with salt-petre again. There are no corrupting materials here to supply septic acid. There is no process of incineration to afford pot-ash. All that is discoverable is the crumbling and mouldering of the calcareous rocks which form the caverns. And in this rubbish or scrapings of the floors are found a large portion of *calcareous*, and a smaller quantity of *alkaline* nitre. To detach the portion of acid which is associated with the lime, the hunters and salt-petre makers find it necessary to add a

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parcel of wood-ashes to the earth brought out of the caves. The alkali of the ashes attracting the acid from its calcareous basis, furnishes a greater quantity of salt-petre, and of a better quality than can be procured by any other method. This *artificial* nitre, added to that previously formed by the *natural* process, makes up the amount which is procured. From a careful consideration of the facts afforded by the *natural* process of salt-petre forming in these vast subterranean excavations, there appears no other way of accounting for the production of both a *portion of the native pot-ash and all the nitrous acid, than by the decomposition of the calcareous rocks,* and the formation of the two materials of salt-petre from the constituent parts of these strata of lime-stone; a part of which seems to change into pot-ash, and another part into nitrous acid!

A somewhat similar fact occurs with regard to the conversion of volatile alkali into nitrous acid. If corruption, instead of going on in open air, is made to take place in a closed apparatus, the ammoniac gradually disappears, and the mass changes to a sulphureo-terrene, or, in some measure, *to a nitrous consistence.* This is analogous to the changing of nitrous acid to ammoniac during the solution of tin, and in other experiments.

Beccher plainly affirms the mixture of septic matter with the water of the ocean. He supposes a quantity of nitrous matter derived to it from the various kingdoms of Nature, whereby salt-petre is superadded to its common salt. This corresponds to Newman's experiment of obtaining *aqua regia* from sea-salt, and of Pringle's experiments of some of it promoting corruption. (See Trans. of American Philosophical Society, vol. v. p. 140.)

But above all the pieces that I have met with in the older writers, *Hoffman's Essay on the dissimilar Nature and Properties of Fixed Alkaline Salts* contains the most pointed evidence of difference between pot-ash after it *has been* combined with septic acid, and pot-ash which has *never been* so combined. His observations are so remarkable that I deem them worthy of a full translation:—" It has been hitherto firmly believed, by experienced chemists, that the nature of the lixivial salts prepared by *calcination* and *incineration*, was not different, but the same, and that they possesed *equal* fitness for the purposes of medicine and the arts; and, indeed, this would seem to be the case, if we merely consider their mixture with acids of various strength, their effervescence, their saturation, and conversion into *salia salsa*, or neutral salts. But it will be more clear-

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ly and undeniably evident, from experiments I am about to relate, that the constitution, composition, and qualities of these alkalies is *not the same*, and that a peculiar and specific difference prevails between them.

"1. *Nitrum fixum*, or pot-ash prepared from salt-petre, deflagrated with charcoal, undergoes strong ebullition on having oil of vitriol poured upon it, and exhales a disgusting smell like aqua fortis; but this does not happen if the experiment be made with salt of tartar or of wood-ashes.

"2. If salt of tartar, or alkaline salt (as pot-ash is called by way of distinction), is melted in a crucible, and powdered charcoal be added to it in its melted state, to the amount of about half the quantity of the pot-ash, then the mass, on being poured out, is of a reddish colour, of a fœtid, sulphureous smell, not unlike the *hepar sulphuris*, ordinarily prepared from salt of tartar and common brimstone: but if the *fixed nitre*; or that caustic salt which is prepared with regulus of antimony and salt-petre, is melted, and charcoal dust added to it in fusion, it does not undergo the smallest alteration of colour, smell or taste, but remains white and very pure.

"3. If with the salt of tartar, which is usually prepared by an extemporaneous process of burning together two parts of salt-petre and one of tartar, there be mixed a tolerably strong spirit of vitriol, instantly an odour like aqua fortis rises; but this never happens with pure salt of tartar, or any lixivial salt prepared from vegetables by incineration.

"4. There is a remarkable difference between the salt of tartar, prepared from crude tartar, *with* an admixture of salt-petre, and that obtained *without* it, as well as between the former and lixivial salt itself; in this respect particularly, that if you pour oil of vitriol gently and gradually upon the former, a stinking, disagreeable odour arises, and the surface becomes covered with a blackish pellicle, together with rising froth; and, indeed, the body of the liquor itself becomes blackish: but most certainly these appearances never happen to pot-ash.

"5. Clear glass can never be made from salt of tartar and sand; but glass of elegant transparency can be formed from the alkaline product of salt-petre and tartar (§ 3), and likewise from pot-ash.

"6. There exists no doubt among those who are addicted to chemical researches, that a highly caustic and alkaline salt may be prepared from two parts of salt-petre and one of regulus of antimony, melted together by a strong

strong fire. This, freed from foreign particles by solution in water, and afterwards dried, acquires an *intensely red* colour by being mixed and digested with highly rectified spirit of wine. But if the like spirit of wine be poured upon the caustic alkaline salt prepared from two parts of salt-petre and one of tartar, dissolved and purified by water in the same manner, there is no tinge or colour of red to be seen.

"And although a tincture of extraordinary virtue, and of a *golden* colour, may be obtained by pouring highly rectified spirit of wine upon the salt of tartar prepared from *tartar alone*; yet the like never happens when the experiment is made with pot-ash, or with that salt of tartar which is formed from *salt-petre* and tartar.

"7. The waters of many of the medicated springs which are cold, and called *acidulous*, or are hot, and called *thermæ*, on undergoing a gentle evaporation, deposit a lixivial salt, which nearly resembles other salts: in this, however, there is a difference, that these lixivial salts of the springs, on being melted with powdered charcoal, are changed to *hepar sulphuris*: but this has not been observed to happen when the like experiment was made with the caustic alkali by regulus of antimony, nitrum fixum, or the alkali from salt-petre and tartar.

"These experiments amply and satisfactorily prove that *common salt of tartar is widely different* from the *alkaline salt which is an ingredient of salt-petre*: for the former, by affusion of oil of vitriol, salutes the nostrils with a fœtid smell, forms a less transparent glass, partly mingles with spirit of wine, and strikes a colour which the nitrum fixum, or the alkali from salt-petre and tartar never do; while, on the other hand, those alkalies which are ingredients of salt-petre, exhale, on being mingled with oil of vitriol, *the nasty odour of aqua fortis.*

"Hence it is correctly inferred, that salts, and other bodies of a very fixed nature, may conceal within them volatile, sulphureous and oily particles, by an attraction too strong for the *most intense fire to overcome*; while, at the same time, their connection is such, that, by virtue of the *attractions* consequent upon mixture with other bodies, these hidden materials may regain their distinct characters, and burst again upon the view."

As these facts were published as long ago as 1736, it might be presumed that the gentlemen who undertake to judge of scientific discussions were acquainted with them. But finding of late, that even they who criticise and publish

lish opinions to the world knew nothing about them, I determined to exhibit them in an English version. Why are all these instructive phenomena forgotten and overlooked? Wherefore are the truths disregarded or rejected which our predecessors laboured so hard to accumulate?

But to show the distinction in this case the stronger, the authority of Boerhaave might be cited. This great chemist affirmed (2 El. Chem. proc. 134) in the account he gives of Glauber's spirit of nitre, "that there was never any acid discovered, in any single experiment, like the acid procured by that process." And I am of the same opinion. This acid, and all its derivatives, are certainly *artificial* products, and exist no where but in the laboratories and in well-stopped vessels; while the original septic acid exists copiously among the ruins of organic matter all over the earth.

On the whole, I wish the gentlemen who attend to this subject to consider two things; first, that pot-ash, or the vegetable alkali, assumes an endless variety of forms, without being adulterated by foreign ingredients, and is not that simple, uncompounded element which some of them pretend to think it: the other is, that not a particle of *nitrous* acid ever existed in Nature; in the laboratory of nature *septic* acid is formed, and oftentimes associated to pot-ash; and by that association, and by the process employed to extract it *by art*, THE SEPTIC ACID IS CHANGED TO THE NITROUS. And it is a most happy event for mankind that it is so; for thereby an alteration is wrought both in the constitution of the acid and of the alkali, very beneficial to living beings. Such being the facts, it clearly follows, that all the experiments made upon *nitrous acid and its derivatives* have no bearing or application to the *original septic acid as engendered or evolved in the putrefactive process.* The man must be very dull who affirms that *nitrous compounds* are the common agents of pestilential mischief; though he must be still more dull if he denies *oxygenated septon,* in its various forms, to be the noxious cause which alkaline salts and earths universally neutralize and subdue.

Through want of attention to these points of difference, it is probably to be understood wherefore my meaning has been so often perverted. Without intending to think or to reason wrong, the philosophical men have charged me with mistakes from which I hope I am free.

I request that they who have misunderstood me may peruse this piece, and reconsider what they have written

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and read. Particularly I request this of CHRISTOPHER ALBERT, who printed a Dissertation at Erlangen in 1798, *de Luis Bovillæ Origine et Naturâ;* and of NATHANIEL WEEKS, who defended an Essay *de Flava Febre,* at Edinburgh, 1799. I would make a similar request of GEORGE LEE, of Philadelphia, if death had not removed him from us; though this amiable and candid man declared to me, in a letter written a little before he became disabled by his infirmities, *that he would never contradict me again.* I give the same invitation to HUMPHRY DAVY, of the Royal Institution, and to the Monthly Reviewers, of London; to D. J. C. SMYTH, to Mr. GUYTON, and to all the advocates for destroying contagion by fumigation with nitrous vapour and oxygenated muriatic gas, on both sides of the Atlantic; and to the writers of speculations upon infectious diseases, who have honoured either myself or my doctrine with their notice, in Philadelphia or Boston. As to the critical remarks made upon Dr. Bay's Dissertation on Dysentery, in Med. Rep. vol. i. p. 241, they were inserted at my suggestion and request, by the learned and polite gentleman who penned that Review. When chemists shall have been taught, by further experiments, how ignorant they are of the true constitution of *nitrous acid,* and, from additional observations, how much they have yet to learn concerning the exact composition of the *vegetable fixed alkali,* they will lay aside a part of the positiveness with which they have conducted this discussion, and practise somewhat more of condescension and forbearance.

New York, March 20, 1803.

A Memoir on Vinous Fermentation; by CIT. THENARD.

THE vinous fermentation has hitherto received more attention than the acetous or putrid, not perhaps that it has any thing in it more remarkable, or more worthy of our consideration, but because it is in the natural order of things, to take more interest and set more value on what is of most immediate utility.

The date of the discovery of the vinous fermentation appears too well established to be called in question. All historians agree in saying, that the most ancient nations knew how to prepare spirituous drinks. It ascends therefore

fore to the remotest times; and, if we pay any credit to the poets, we must carry it back to the fabulous ages. Indeed it would be surprising, if it escaped the notice of the earliest of men. An ebullition arising spontaneously in a liquid, a whole mass rising of itself, a sweet liquor becoming vinous, the change of a saccharine matter into an ardent spirit, are all extraordinary things, calculated to strike the attention, and awaken the desire of tracing them to their first causes. Accordingly there is no phenomenon more early observed, and none that has been the subject of more consideration, or has given birth to more experiments; yet, from one of those contrasts that rarely occur in the annals of science, though it has been the most studied, there is not perhaps one, with which we are less acquainted. It has been a rock, on which the endeavours of chemists, in all ages, have split. Beccher, so celebrated for his subterranean physics; Stahl, the Nestor of the ancient chemistry; Boerhaave, whose ideas were so great; Rouelle, to whom science is indebted for part of the progress it has made during the last half century; and Macquer, that master in the art of writing, all failed in their attempts to penetrate this mystery of Nature. Lavoisier, who was capable of surmounting the greatest obstacles, is the only person, who, enlightening the whole sphere of chemistry by his genius, travelled this obscure path without wandering out of his road. His enquiries into fermentation will ever remain a model of vegetable analysis. In this, as in every thing else he did, he observed that strictness of deduction, and accuracy of operation, which are his characteristics, and which may be considered as the source of the splendid discoveries, that will for ever illustrate his name. Still, notwithstanding the excellence of what he did, he was far from leaving nothing more to be done. Though he shed great light on this part of science, the obscurity with which it was enveloped was so great, that it is still seen only through the mist. This is a truth that did not escape himself; he was well aware that he had only laid open the path to the goal, which no doubt he would have reached, no doubt he would have completed the career he had begun with such success, had not death, jealous of his fortune and glory, robbed science of his labours.

All we know of fermentation in fact is confined to this, that the saccharine matter is converted into alcohol and carbonic acid by means of an intermediate substance. But what is the nature of this substance? and how does it act

act on the sugar? These two grand questions form the subject of the present memoir; questions that have been often attempted, without ever having been solved. Some have thought, that the fermenting principle resided in the extractive matter. Others would have it to be in the mucilage, because this more frequently accompanies the extractive matter. Some, again deceived by the presence of tartar in wine, have imagined they found in this the true ferment; but if, instead of confining themselves to the fermentation of the must of grapes, they had turned their attention to that of other juices, in which analysis cannot discover the existence of this salt, they certainly would not have fallen into this error. Others, lastly, inconsiderately adopting all these opinions, have asserted, that a mixture of these different matters preside as it were over fermentation, effecting the decomposition of the sugar, and its conversion into alcohol.

Of these hypotheses, some are evidently false; others are seducing, and acquire from specious reasoning some degree of probability. But before we admit them, we must consult experience; we ought, leaving them all out of the question, to deduce from observation the theory, which we are too apt to form beforehand. If the genius of Stahl, instead of giving birth to phlogiston, a being that never existed but in the brilliant imagination of that extraordinary man, had interrogated nature by means of experiment more than he did, perhaps it would not have gone astray; perhaps Stahl would have discovered the truth, and deprived France of the glory of having produced the author of the modern theory of chemistry.

Such is the course I have pursued. Before I formed or adopted any system, I observed facts, and deduced from them consequences, which, it appeared to me, must guide us to the view of what passes in liquors under fermentation. But in a subject of such nicety nothing is more easy than to deceive ourselves; and it is particularly for the purpose of correcting my notions, if they be not just, that I submit to the world the result of my inquiries.

My first observations were made on the juice of gooseberries, which I had strong reasons to prefer to any other; its fermentation proceeding with most celerity, so that it is consequently best calculated to throw light on the causes that produce it. All my researches were directed at first to discover the matter, that serves as a ferment. It would be making a great step, and almost resolving the problem, or at least discovering a number of truths not yet

yet known, to determine the nature of this matter, and to ascertain whether it be always one and the same, or whether there be several that possess this property. This important question had struck me long ago: I had even meditated upon it occasionally, and promised myself to attempt its solution, when the Institute proposed it as a subject of a prize. This was an additional strong motive to my pursuing it. I was far from being disposed to admit several fermentative principles; every thing led me to believe, that there was but one, and that it was none of those hitherto suspected, since in fact neither extractive matter, nor mucilage, nor tartar, &c. acts upon sugar. But this required positive demonstration; and though I have yet no absolute proofs of it, as it is by no means demonstrated that there are several, and one is observed on all occasions, this opinion seems to me at present to deserve the preference.

Through a linen cloth of close texture I pressed out the juice of a killogramme of gooseberries. It was turbid, and held in suspension a slightly glutinous matter, which I separated by the filter, and washed in a large quantity of water. As nothing is to be neglected in experimental science, and the most trifling fact frequently leads to important consequences, I subjected this matter to a regular examination. I first mixed it with sugar and water, to see whether it would cause them to ferment; and I soon perceived many bubbles of an elastic fluid to be extricated, which I found to be carbonic acid. The effervescence continued a week, and at the end of this period the liquor was a pleasant drink, but slightly saccharine; it contained a great deal of alcohol, and might easily have been mistaken for a wine not completely made. It may be supposed I redoubled my zeal and attention in the examination of a substance, that offered me what I sought. It was natural first to inquire, whether the whole of it were adapted to decompose sugar; but a sixth part of its weight being scarcely able to effect this decomposition, I concluded, that it contained the fermentative principle only in small quantity. This I attempted every method in vain to separate, and obtain apart: nothing therefore remained for me, but to compare it before and after it had served to produce fermentation. It was not apparently altered by this process; being still insipid, insoluble both in water and in alcohol, and affecting neither infusion of litmus nor syrup of violets; but on distillation it no longer afforded any trace of volatile alkali. This result, at which I was

I was not surprised, and which a second experiment confirmed, was nevertheless a ray of light, that confirmed me in the course I should pursue. It showed me, that the germ of fermentation was of an animal nature, it agreed with the ideas I had before conceived, and gave to my suspicions an appearance of reality.

I now examined the juice of gooseberries with great care, to discover this animal matter, which I considered already as the true ferment. As it was insoluble by itself, it must be combined with some substance, that held it in solution. All the reagents I employed failing to answer the purpose, I had recourse to fermentation itself, and observed the phenomena produced by it under all circumstances. I made my experiments on nearly a litre of filtered and perfectly clear juice. The apparatus was placed in a stove, where the thermometer stood at 20°: it was not long before a fermentation was evident; a large quantity of carbonic acid was presently evolved; much froth was formed; the liquor lost its transparency, and it even became so turbid, that a sediment was thrown down, which was more evident as the fermentation approached its end. This sediment was of a yellowish white colour, glutinous, void of taste, grew brown on drying in the open air, and became slightly acid. Thrown on red-hot coals it burnt in the same manner as animal substances: distilled in a small retort it afforded a considerable quantity of carbonate of ammonia even crystallized. It made sugar ferment with extreme promptitude. In short, it was a substance perfectly analogous to the yeast of beer.

I was eager to try whether this phenomenon were general, as it ought to be according to my mode of reasoning: and in fact experience soon taught me, that it was common to all juice in a state of fermentation. The must of grapes, the juice of cherries, pears, peaches, and apples, and the decoction of barley and of wheat, afford yeasts in their fermentation. The grape juice yielded more than the others, though less than that of gooseberries: accordingly it did not ferment so readily as the latter. The juices of cherries and peaches deposited nearly the same quantity: those of pears and apples afforded very little, which is the reason why their fermentation is so slow. I could have wished to have had a greater number of fruits at my disposal, that I might have varied my experiments more: they were sufficient, however, to prove, that, where alcohol is formed, a sediment of yeast is commonly formed likewise. If they who

have

have any doubt on the subject remaining will maturely consider the two following experiments, I believe they will find themselves convinced. I knew that honey diluted with water would gradually be converted into a liquor containing spirits. Cullen informs us, that the saccharine urine of a diabetic patient undergoes in time the same change. Accordingly I set both of these to ferment, and the sediment of yeast was formed in each.

It may be laid down, therefore, as demonstrated, that in every spirituous fermentation an animal matter is deposited, similar in all respects to that arising from wort, possessing absolutely the same properties, and in particular that of decomposing sugar, and converting it into carbonic acid and spirit of wine. This gives rise to a new question, that naturally presents itself, and ought next to occupy our attention. Is the yeast generated in the process of fermentation, or rather was it already formed, and did serve as a ferment?

I must confess we have yet no experiments, which directly prove, that Nature employs this substance exclusively to effect the conversion of sugar into alcohol and carbonic acid. For why should it be deposited when the fermentation has taken place? It may be said indeed, that the sugar holds it in solution, that it can dissolve more than is necessary for its decomposition, and that then the excess is precipitated. But this theory is feebly supported by experiment. Is this a sufficient reason to reject it altogether? Have we not several instances of compounds, that require much time for their formation? And this perhaps is what occurs in the juices of fruits, where the ferment and the sugar are long in contact with each other. What is certain, or what at least appears probable, is, that if yeast be a product of fermentation, as all liquors that ferment deposit it, no doubt it owes its origin to one and the same soluble substance, from which it differs little, and which produces it by its reaction on the sugar.

Whichever of these two opinions obtains the preference, after more numerous trials, as I have no doubt that yeast is an immediate principle of vegetables, and in consequence acts an important part in the phenomena both of Art and Nature; as I am likewise persuaded, that, if any other substance capable of exciting fermentation exist, it is in the highest degree analogous to yeast; that it differs from it very little; that it is composed, like it, of azot, oxygen, carbon, and hydrogen; and lastly, that it has,

no doubt the same mode of acting on sugar: I shall proceed to exhibit with the greatest care the properties of this matter, which I shall henceforward term ferment, and in particular consider well its action on the saccharine principle, in order to establish the theory of fermentation. This theory, even supposing yeast not to exist already formed, but to be produced in fermenting juices, will still be of utility, and capable of various applications, as will appear below.

I shall not recapitulate the physical qualities of ferment, as I have mentioned them several times already; but I shall confine myself to its chemical properties, which alone are of essential import. It has no taste. It neither reddens infusion of litmus, nor changes syrup of violets green. The putrid fermentation, which in time it undergoes, is in every respect similar to that of animal substances. By desiccation it loses three-fourths of its weight, and this loss consists entirely of water. Thus dried it is still capable of exciting fermentation; it is by no means decomposed, and may be preserved in this state without alteration for an indefinite time. We may avail ourselves of this property, to convey it to places at a distance from any brewery, or with which it is so difficult to keep up an intercourse, that fresh yeast could not be sent to them, particularly in summer, without becoming putrid. Distilled in a small retort, and urging the fire so far as this would bear, eight parts of ferment left a residuum of 2.83 of coal; and I obtained 1.61 of water, 1.31 of oil, and 1.46 of muriat ammonia on adding muriatic acid. Finally, I collected 0.33 of gas, containing a fifth of its bulk of carbonic acid, and which, when this was separated from it by potash, burnt like carbonated hydrogen, and required 1.5 of oxygen for its combustion. From this experiment we see, that ferment contains in particular a great quantity of carbon.

Water at the temperature of 12° or 15° does not dissolve $\frac{1}{200}$ of ferment: indeed, it dissolves so little, that after standing upon it several hours, and being well filtered, it has scarcely any action upon sugar. Boiling water occasions it to undergo a decomposition, which I shall examine in another memoir.

Nitric acid, even diluted with water, at eighteen degrees, decomposes it also: it converts it into grease; and there is evolved from it at first azot mingled with carbonic acid, and afterward nitrous gas at the same time.

Potash acts upon this substance in the same manner as upon animal matters, and the phenomena in both cases are

perfectly the same: with each it forms a saponaceous substance, and a great quantity of ammonia, that it volatilizes.

But of all the properties of ferment, no one is so remarkable, and at the same time so useful, consequently no one so much deserves to be studied, as its action upon sugar: this is interesting to men in every class of society, from the mechanic to the philosopher; to both by its products, and to the latter because it may be a fertile source of reflection and of new truths. It is much to be regretted, that Lavoisier did not pursue the investigation as he intended, and examine it with that care, which is conspicuous in all his labours. Who was more capable of giving birth to a theory of fermentation, than the author of the modern theory of chemisty? No doubt he was prevented from doing this by a concurrence of circumstances: and this theory, important as it is to science, has hitherto remained vague and hypothetical. Knowing the fermentative principle, it could not avoid naturally making a part of my researches: if I have not rendered it as clear as I hoped, at least the veil with which it was covered is removed, and it rests on reasoning confirmed by experiment.

To obtain the solution of this problem, I added together different quantities of ferment and sugar; I observed in every case what became of both; and I confirmed by farther observations what the preceding had suggested. Sixty grammes (927 grains, or nearly one ounce of ferment) not dried, and three hundred grammes (4630 grains) of sugar entered into fermentation readily, the temperature being 15° (centigrade=59° Fahrenheit.) In four or five days all the saccharine matter had disappeared; 51.5 litres (3041 cubic inches) of carbonic acid had been evolved; the liquor being filtered, and distilled to two-thirds, gave on a second rectification 863 grammes of spirit at 15°. The apparatus was so contrived, that nothing was lost: the receivers were cooled with common salt and ice. I found by synthesis, that this quantity of spirit was equivalent to 171.5 grammes of alcohol at 39°. The residues left after distilling the spirit were poured into dishes and evaporated to dryness: from the residuum of the second distillation nothing was obtained, but that of the first yielded about 12 grammes of a nauseous substance, slightly acid, and feebly attracting the moisture of the air. I wished to discover the nature of this acid, but there was too little to ascertain it. Lavoisier says, it is the acetous. Lastly, of the sixty grammes of ferment, there remained forty grammes

mes of a substance, which I believed to be more animalized than the ferment itself. I was much surprised to find, that I obtained from it by distillation much less ammonia. Hence I suspected, that by mixing it afresh with sugar, fermentation would again take place, and thus all the azot would disappear. What I had foreseen occurred: at the end of seven days, having filtered the liquor, I obtained as a residuum thirty grammes of a substance, which on distillation gave no trace of volatile alkali. I was persuaded, that the azot was carried off with the carbonic acid gas. To convince myself of this, I collected near 41 litres of the carbonic acid in an inverted vessel filled with solution of caustic potash. The whole was absorbed, which leaves no doubt of its purity.

What then becomes of the azot? it ought to be found either in the residuum of the ferment, or in the residuum obtained by evaporating the liquor left after distillation, or in the alcohol: but the residuum constitutes only half the ferment employed; the quantity of matter left by 300 grammes of sugar and sixty of ferment amounts only to twelve grammes; and neither of these yields any ammonia on distillation, while ferment affords a great deal. If these observations be just, if I have accurately noticed all the phenomena, if nothing have misled me, we cannot avoid concluding, that the azot must exist in the alcohol. Yet I have sought in vain to discover its presence in this fluid, in ether, and in the acetous acid: on passing these through tubes heated red-hot in the fire, and burning the gasses in Volta's eudiometer by means of the electric spark, we obtain such small quantities, that they are by no means sufficient to decide the question: 24 or 25 parts of gas yield at most one of residuum.

I have made several other experiments however, which hitherto tend to show, that azot may exist in such a manner as not to be discovered on distillation, consequently that it may be one of the constituent principles of vegetables, though in general when distilled they afford no ammonia. But as I have not repeated these experiments, and they are of such importance, that we cannot be too reserved in announcing them, I purpose to revise and vary them; I will endeavour to appreciate all the circumstances, and if I obtain convincing proofs, I will not delay communicating them to the public.

However this may turn out, these results afford us sufficient light, to see what passes in the act of fermentation. In this respect I cannot agree in opinion with Lavoisier. I do

I do not believe as he does, that all the carbonic acid formed proceeds from the sugar. How, on such a supposition, can we conceive the ferment to act upon it? I think, that the first portions of acid are owing to a combination of the carbon, of the ferment, and the oxygen of the sugar, and that the ferment gives rise to fermentation by abstracting from the sugar a portion of this principle. To render this idea more clear, I suppose a particle of sugar to be formed of eight parts of oxigen, four of carbon, and one of hydrogen, which is not very remote from the truth, according to the experiments of Lavoisier: one of these eight parts of oxygen will unite with a fourth part of the carbon of ferment, and then, the equilibrium between the principles of the sugar being disturbed, they will combine in a different manner, so as to form carbonic acid and alcohol. The ferment has in fact a strong attraction for oxygen; as is proved by its decomposing air with the greatest facility; when acetous and carbonic acids are produced, and the azot is disengaged. If pure air be employed instead of common air, the re-action is still more speedy. I have introduced 15 grammes of ferment into a vessel filled with a litre of pure air; I opened it over quicksilver; a fifth of its bulk was absorbed; the ferment was grown sour, all the oxygen gas had evidently disappeared, and was converted into carbonic acid: the temperature was 15°.

From what has been said we see what becomes of the carbon of the ferment, and we shall learn what may become of its other principles, if we recollect the quantity of products resulting from a given quantity of matter subjected to fermentation, and comparing the nature of the one with the other.

From sixty grammes of ferment, and three hundred grammes of sugar we obtained, carbonic acid 95 grammes, pure alcohol 171.5; extractive matter, slightly acid, and containing no azot, 12; residuum of the ferment 40. These 40 grammes still contained 25 of ferment, so that 35 only had been employed for the decomposition of the sugar; and these 35 were reduced to 15 of a white substance insoluble in water, incapable of acting upon sugar, yielding no ammonia on distillation, and leaving a coal, that burns with scarcely any residuum; in short, exhibiting characters that distinguish it from all other substances, induce me to consider it as a peculiar matter.

It appears then, that ferment takes oxygen from sugar, not only by means of part of its carbon, but also by means of

of part of its hydrogen; for the quantity of carbon given out by ferment is too small, to be the sole germ of fermentation. The azot disappears, and enters perhaps into the composition of the alcohol; the other principles of the ferment form acetous acid, and a peculiar insoluble white matter, which is precipitated. The acteous acid remains in solution in the liquor left after distillation, with an extractive matter, proceeding no doubt from the sugar, and foreign to it.

It is not probable, that the elements of the sugar, in their re-action upon each other when the equilibrium between them is disturbed, form water: there is very little hydrogen in sugar, and a great deal in alcohol; and besides, on adding together the quantity of carbonic acid, of alcohol, of extractive matter, and of residuum, we have a deficiency of one eleventh only of the matter by which they were produced. This loss must be attributed to the water the sugar contains, and is by no means owing to alcohol being carried off by the carbonic acid. Of this I have been convinced myself by receiving more than thirty litres of this gas in caustic potash; and by distillation and rectification I obtained only a few grammes of fluid, which had so little taste of spirit, that it was not to be distinguished.*

This theory appears to me so much the more probable, because it perfectly accords with facts; and this truth becomes particularly striking when we compare them. I am far, however, from considering it as complete. Time no doubt will bestow on it the perfection it wants; and I hope myself soon to add to its evidence. I know not whether I shall be able to discover what becomes of the azot of the ferment: but I shall ascertain without difficulty, whether the residual matter obtained, which I consider

* Cit. Seguin has laid before the Institute a very different theory of fermentation. He thinks, that in this process water is decomposed, that its oxygen unites with the carbon of the ferment, and produces carbonic acid, while its hydrogen combines with the sugar, and converts it into alcohol. For this theory to be admissible, we should obtain more alcohol than there was sugar; but the fact is, little more than half its weight is produced, and besides, supposing all the carbon of the decomposed ferment to be converted into carbonic acid, at most not above a sixth part of the quantity actually produced would be formed, as we may easily convince ourselves from calculations already established. It may likewise be objected to this theory, that sugar contains a great deal of oxygen, and alcohol very little.

sider as a peculiar substance, be a product of fermentation as I believe; whether the sugar contribute to its formation which is possible; or whether it be ready formed, and merely precipitated, which is contrary to all probability. The experiments, that remove all my doubts on this head, I shall relate in a second Memoir, in which I shall not only elucidate such points in this as may appear equivocal, or at best resting on too slight foundations, but I shall also exhibit all the particulars that result from them. Here, on the contrary, I have avoided them as much as possible, and endeavoured to consider the phenomenon only in a general way.

Chemical Analysis and Properties of Arseniated Hydrogen Gas, by PROFESSOR TROMSDORFF.

THE immortal Scheele, in his essay on arsenic and arsenic acid, mentions an inflammable arseniated gaseous fluid, of which he says: "*Hinc intelligas, hunc aerem inflammabilem esse, regulumque arsenici solutum tenere.*" Scheele states, that he obtained this gas during the solution of tin in arsenic acid. The properties of this gas, as pointed out by him, are the following. Arseniated hydrogen gas is insoluble in water; it does not render lime-water turbid; mingled with atmospheric air, no diminution of bulk ensues; on bringing the flame of a taper in contact with this mixture, a loud detonation follows, and metallic arsenic is deposited. Interesting as the observations here pointed out must appear to every chemist, the object has been neglected by succeeding operators.

Proust is the only philosopher who mentions this gas: he obtained it by digesting arsenious acid and zinc, in dilute sulphuric acid; on burning the gas, he obtained sometimes arsenious, at others arsenic acid. Being persuaded that the formation and properties of this gas deserved a closer examination, I instituted a series of experiments, the results of which are as follow.

Methods of obtaining arseniated Hydrogen Gas.

1. There are a variety of processes for obtaining arseniated hydrogen. It is produced by heating tin filings in liquid arsenic acid. This method is the most expensive and

and most tedious. During the evolution of the gas in this process, arsenic, alloyed with tin, is precipitated, and the fluid obtained, holds in solution arseniate of tin.

2. It is likewise formed by treating in a similar manner, arsenic and iron with muriatic acid.

3. Arseniated hydrogen is also produced by heating a mixture of arsenious acid, iron filings, and muriatic acid. The fluid, in this case, contains muriate of iron and muriate of arsenic.

4. Tin filings and arsenic acid yield this gas under similar circumstances.

5. Four parts of granulated zinc and one of arsenic, treated in a similar manner with sulphuric acid, previously diluted with two parts of water, afford arseniated hydrogen very readily.

The gas obtained according to either of these processes, is nearly alike, but that produced according to the last process seems to be the most perfect gas, for it contains no excess of hydrogen. When arseniated hydrogen is produced by means of zinc, arsenic, and dilute sulphuric acid, the quantity of arseniated hydrogen is less than the quantity of hydrogen which would be obtained in decomposing water in a similar manner, without the interposition of arsenic. The residue, after the evolution of the gas has ceased, contains metallic arsenic; part of the hydrogen must therefore have acted on the oxygen of the arsenic acid, in order to reduce it to the metallic state. From what has been stated, it appears that arseniated hydrogen contains arsenic in a metallic state, and not in the state of arsenious, or arsenic acid. This will become more obvious in the sequel of this paper.

Physical Properties of Arseniated Hydrogen Gas.

Arseniated hydrogen is a permanent elastic aeriform invisible fluid. It is a true chemical compound. Proust asserts that it deposits arsenic: This, however, I have never been able to observe, if the gas were *pure*. It has an alliaceous fetid smell. It extinguishes burning bodies. It is not absorbable by water; but when this fluid is freed from atmospheric air, it takes up a small quantity of the gas which becomes disengaged again by mere agitation. It does not change the colour of tincture of litmus. The specific gravity of arseniated hydrogen is, at 28′ barometrical pressure = 0,5293, or, one cubic inch (old French measure) weighs

weighs 0,2435 grains. It is therefore lighter than oxygen, nitrogen, atmospheric air, carbonic acid, nitrous gas, ammonia, and gazeous oxyde of carbon, but heavier than hydrogen and sulphurated hydrogen gases. It is absolutely fatal to animal life.

Chemical Properties of Arseniated Hydrogen Gas.

Arseniated hydrogen, mingled with atmospheric air, suffers no chemical change, but mere dilution. The same holds good with respect to nitrogen. When mingled with nitrous gas, a diminution of 0,02, or 0,03 takes place, which sometimes even amounts to 0,05. To ascertain the nature of this gas, I mixed two parts of arseniated hydrogen with one of nitrous gas, and gradually added oxygen, till no further diminution of bulk ensued. On presenting to this mixture a lighted taper, a loud explosion took place, accompanied with flame. Probably part of the oxygen added, remained uncombined; for a mixture of two parts of nitrous gas, and three of arseniated hydrogen, could not be inflamed by the taper; arseniated hydrogen is misceable with hydrogen, with carbonic acid, and with ammonia in all proportions.

Into a cylinder half filled with arsenic and hydrogen, I sent up bubbles of oxygenized muriatic acid gas. The bulk of the gas was diminished, heat was evolved, and metallic arsenic was deposited in a crystalline state. On adding to the mixture an additional dose of oxygenized muriatic acid gas, white fumes appeared, and the deposited metal vanished. The same experiment was repeated successively, taking care to add no more of the latter gas, than was just sufficient to occasion the precipitation of metallic arsenic. The collected metal yielded nitrous gas, by the affusion of nitric acid, and on adding to this mixture muriatic acid, arsenic acid was produced. The arsenic deposited in the manner stated before, when laid on ignited coals, volatilized in thick white fumes, yielding arsenious acid. The precipitation of metallic arsenic must be ascribed to the decomposition of the oxygenized muriatic acid gas; the oxygen of this gas uniting with part of the hydrogen of the arseniated hydrogen, and forming water, and thus separating the arsenic. For the arsenic is capable of being oxyded by the muriatic acid. Should it be imagined, that arsenic existed in arseniated hydrogen, in the oxydized state, and that it became precipitated by the oxygenized muriatic acid robbing it of its oxigen; we suppose things analogically erroneous, for the oxygenized

mariatic

muriatic acid is more capable of giving out oxygen than of taking it. The experiments of Chenevix seems perhaps hostile to this assertion; but the experiments of this philosopher merely prove that the oxygenized muriatic acid is capable of combining with an additional dose of oxygen, and constituting with it a hyperoxygenized muriatic acid. This certainly cannot be the case in the present instance, as will appear more evident from what I shall state presently.

I filled a cylinder in the mercurial pneumatic trough with arseniated hydrogen, and sent up into it as expeditiously as possible, a quantity of oxygenized muriatic acid gas. The result was evolution of heat, diminution of volume, and the inner sides of the cylinder became covered with a kind of dew. A formation of water had therefore actually taken place in this experiment. Into another dry cylinder half filled over mercury with arseniated hydrogen, I introduced dry muriatic acid gas. In this case no diminution of bulk, no separation of arsenic ensued; no change at all took place. Repeating the same experiment, I introduced into the cylinder a small quantity of water; the muriatic acid gas was absorbed, and the residue was arseniated hydrogen unaltered.

Into a cylinder half filled with oxygenized muriatic acid gas, I passed gradually arseniated hydrogen in small bubbles at a time; in this case no metallic arsenic was separated, but thick white clouds appeared. On continuing the addition of arseniated hydrogen till no more white fumes appeared, metallic arsenic was deposited. It follows from this experiment, that when a *small* quantity of arseniated hydrogen is made to act upon a *large* quantity of oxygenized muriatic acid gas, part of the oxygen of the oxygenized muriatic acid gas combines, not only with the hydrogen of the arseniated gas, and forms water, but the metallic arsenic also becomes oxydised. Reasoning from this fact, we should be inclined to believe, that a mutual decomposition of both the gases could be thus effected; but this cannot be accomplished; a diminution of bulk indeed takes place to a certain extent, but the complete disappearance of both the gases cannot be effected. If the admixture of arseniatud hydrogen with this oxygenized muriatic acid gas, be continued no longer than white clouds appear, and the residue be then examined, it will be found to consist of hydrogen and oxygenized muriatic acid gases; and the mixture detonates at the approach of a taper. The oxygenized muriatic acid

2 gas

gas can only be separated with difficulty by long agitation, in contact with water, and it seems as if it were become less soluble in that fluid. If the separation of this gas be accomplished, the remaining arseniated hydrogen burns with a pure flame, void of alliaceous odour, and contains no vestige of arsenic, as shall be proved hereafter. From what has been stated, the following theory may be formed.

Arsenic, in combination with a certain portion of hydrogen, constitutes arseniated hydrogen gas. On presenting to this combination oxygenized muriatic acid gas, the oxygen of this gas combines with the hydrogen, which held in solution the arsenic, and the latter is separated. If more oxygenized muriatic acid be added than is necessary for this purpose, the portion of oxygenized muriatic acid gas does not act further upon the hydrogen, but merely upon the arsenic, and the latter becomes oxydised.

Hydrogen and arseniated hydrogen may be mingled without decomposing each other; the decomposition can only be effected by the contact of fire; but if we mingle hydrogen, holding in solution sulphur and oxygenized muriatic acid gas, the decomposition and formation of water is instantly effected. This is likewise the case with arseniated hydrogen gas.

Hitherto no combination of hydrogen with a metallic substance has been known; but it is highly probable, that such combinations may exist. This indeed seems to be the case in the formation of this gas on which we are treating. If this be admitted, a division of hydrogen must take place in the following manner; one part of it must unite with the oxygen of the oxygenized muriatic acid gas, to produce water; another part must fall down with the arsenic; and another portion remains combined with caloric, in the form of hydrogen gas.

Hydrothian acid gas and arseniated hydrogen do not act upon each other. To a mixture of equal parts of hydrothian acid gas, and arseniated hydrogen gas, I added gradually oxygenized muriatic acid gas; a diminution of volume instantly took place, accompanied with liberation of heat, and a deposition of yellow sulphurized arsenic (orpiment). On adding an additional quantity of gas, the precipitate acquired a beautiful orange red colour, and on continuing the addition of oxygenized muriatic acid gas, white clouds were produced, the precipitate detached itself from the sides of the vessel, and

were

were gradually converted into a pulverulent substance of a yellowish white colour.

The results of these experiments are obvious, and might have been expected *a priori*. But they may serve as a test to discover the presence of arseniated hydrogen, when contained in other gases.

I mingled one cubic inch of arseniated hydrogen with ten of nitrogen, and one of hydrothian acid (sulphurated hydrogen gas;) on adding to this mixture a small quantity of oxygenized muriatic acid gas, yellow sulphurized arsenic was instantly deposited. It is not improbable, that arsenic is likewise soluble in other gases, and in this case the hydrothian acid (liquid sulphurated hydrogen,) in conjunction with oxygenized muriatic acid, would prove a useful re-agent for discovering the presence of it.

A lighted taper immersed in a phial filled with arseniated hydrogen, is instantly extinguished; at the same time that the gas burns at the orifice of the phial with a lambent white flame, diffusing a disagreeable odour, and much white fumes, which are arsenious acid. If the gas be inflamed in a phial with a small orifice, the flame descends gradually down to the bottom of the phial, which becomes lined with a coat of crystallized metallic arsenic. In this case therefore the hydrogen alone burns.

If two parts of arseniated hydrogen be mingled with three of oxygen, and a taper be presented to the mixture, an explosion takes place; no metallic arsenic is separated, but the products are arsenious acid and water: soap-bubbles with the mixture of these gases, explode with a bluish white flame, leaving a white smoke and strong alliaceous odour. Equal parts of arseniated hydrogen and oxygen gases, fired in like manner, do not explode so loudly, but the report is accompanied with a much more vivid flame. A stream of arseniated hydrogen, issuing from a bladder fitted with a stop-cock, and set to burn in a large receiver filled with oxygen, yielded arsenic acid. The combustion in this manner is uncommonly beautiful; the gas burns with a blue flame of uncommon splendor.

Two parts of arseniated hydrogen, and one of oxygen gas, being detonated in a close vessel by means of the electric spark, left a small residuum; on repeating the experiment, the detonating tube broke during the explosion, which prevented the examination of the residue. From what has been so far related, it becomes evident that the constituent parts of arseniated hydrogen gas, are metallic arsenic and hydrogen. Were it possible to determine

termine with absolute certainty, that no increase of volume took place during the solution of arsenic in hydrogen, the proportion of the constituent parts of this gas might be ascertained thus:

	French weight and measure.
One cubic inch of hydrogen, weighs - -	0,0353
One cubic inch of arseniated hydrogen, weighs	0,2435
Deducting the former from the latter, we get	0,2082

Which is the quantity of arsenic dissolved in the gas, consequently one cubic inch of arseniated hydrogen gas consists of 0,0363 hydrogen, and 0,2082 arsenic; and one cubic inch of this gas contains about ¼ grain of metallic arsenic.

Habitudes of Arseniated Hydrogen to Acids.

Into a phial, containing about eight cubic inches of arseniated hydrogen, I poured a half cubic inch of concentrated nitric acid. The moment the acid came into contact with the gas, the phial was filled with dense red fumes, a white flame pervaded the vessel, and a detonation ensued.

On repeating the experiment with dilute nitric acid, no ascension took place. The residuary gas was pure hydrogen, and the water contained arsenic acid. Fuming concentrated nitrous acid therefore is capable of oxydising the arsenic contained in this gas, at the same time that the oxygen of the acid burns with the hydrogen of the gas, and produces water; whereas weak nitric acid is only capable of oxydizing the arsenic, without acting upon the hydrogen present.

Into a glass tube, furnished with a stopper at one extremity, and closed at the other, I introduced eight cubic inches of arseniated hydrogen, to which were added two cubic inches of nitro-muriatic acid. After having agitated the fluids, on opening the tube under water, a diminution of one cubic inch took place. The residuary gas was pure hydrogen. It is remarkable, that during the addition of the nitro-muriatic acid, a black powder separated, which again disappeared on agitating the tube. Nitro-muriatic acid acts therefore in the same manner upon this gas, as oxygenized muriatic acid gas. It effects first a separation of the metallic arsenic, and then oxygenizes this metal. Liquid oxygenized muriatic acid decomposes arseniated hydrogen by mere agitation; the residue is hydrogen.

Muriatic

Muriatic acid exercises very little action upon arseniated hydrogen; but merely dissolves a minute portion of it, which may be expelled again by heat. Concentrated acetic acid has no effect upon it.

Into a glass cylinder holding eight cubic inches of arseniated hydrogen, I poured one cubic inch of concentrated sulphuric acid, and then closed the tube. At the moment of the addition of the acid, the cylinder became lined with a coat of bright metallic arsenic, so as to resemble a looking-glass. On agitating the cylinder, the coating resolved itself into a brownish black powder, which, after a few days, assumed the colour of Kermes mineral. On opening the cylinder under water, a diminution of bulk ensued, and the residuary gas proved to be hydrogen. The experiment was repeated, and yielded the same results. The sulphuric acid employed in this experiment, had acquired a penetrating pungent smell, and was examined, after having been neutralized by ammonia, in the following manner:

Ammoniate of copper, on being mingled with it, acquired a greenish colour. Hydrosulphuret of ammonia instantly occasioned a copious yellow precipitate.

Water impregnated with sulphurated hydrogen gas, occasioned a similar effect. From the results of these tests it becomes obvious, that the acid consisted of sulphuric, sulphurous, and arsenic acid. In order to be certain in this respect, I mingled a few drops of liquid arsenic acid with a mixture of sulphuric and sulphureous acid, neutralized the fluid with ammonia, and submitted it to the same tests. The results of this mixture were analogous to the former. The decomposition of the arseniated hydrogen gas, is probably analogous to the decomposition of this gas, by means of oxygenized muriatic acid gas. The sulphuric acid first gives up part of its oxygen to the hydrogen of the arseniated gas, and occasions the separation of the arsenic; which, at the expence of the remaining portion of oxygen of the sulphuric acid, becomes afterwards oxygenized, and constitutes the arsenic acid.

Habitudes of arseniated Hydrogen Gas to Metallic Solutions.

I caused a current of arseniated hydrogen gas to pass through a solution of ammoniate of copper. A metallic pellicle appeared on the surface of the fluid, which suffered no other change.

Into a bottle filled with arseniated hydrogen gas, I dropped a solution of muriate of tin. On agitating the solution, it

it acquired a brown colour, a partial diminution of the gas ensued, but the solution of tin was not converted into an oxydized muriate of tin, which would have been the case, if the arsenic existed in the gas in an oxydized state.

Nitrate of lead, on being brought into contact with arseniated hydrogen gas, became turbid, and deposited a precipitate, which was arseniate of lead.

Nitrate of silver submitted to the action of the gas, became instantly of an intense black, and a pellicle of metallic silver collected on the surface of the fluid. The residue of the gas, which had been made to act on the oxyde of silver for some time, had all the properties of pure hydrogen.

This experiment shows, that nitrate of silver might be employed for detecting the presence of arseniated hydrogen; for as long as a minute quantity of arsenic was present, a black precipitate ensued, whereas *pure* hydrogen has no effect upon this re-agent.

I passed into a concentrated solution of nitrate of silver, a stream of arseniated hydrogen, collected the black metallic precipitate, washed and dried it. The fluid obtained in this process did not disturb the transparency, or change the colour of ammoniate of copper. Neither liquid sulphurated hydrogen, tincture of galls, nor potash, had any effect upon it. It contained therefore neither silver nor arsenic. The precipitate before obtained, acquired a metallic lustre on being saturated; laid on ignited coals, it diffused an odour of arsenic, and it yielded by fusion a button of silver. It was an arseniate of silver.

Arseniated hydrogen passed into a solution of nitro-muriate of gold, occasioned a precipitate; on the surface of the fluid appeared a pellicle of metallic gold; and the sides of the vessel, in contact with the fluid, became beautifully gilded. The fluid through which the gas had been passed, examined in the usual manner, proved to contain no vestige either of gold or arsenic. The precipitate greatly resembled charcoal dust, interspersed with minute particles of gold.

It is highly probable, that arseniated hydrogen is capable of decomposing all metallic solutions, the basis of which is either nitric, or muriatic acid, and probably other acids.

Habitudes of arseniated Hydrogen Gas to various other Bodies.

Expressed oils, on being agitated for some time in contact with arseniated hydrogen, absorbed part of the gas, and acquired a deeper colour.

Alcohol

Alcohol suffers no change from arseniated hydrogen. Solution of potash, and liquid ammonia, do not absorb it.

Such are the properties of this gas, the investigation of which I shall continue as soon as my health is restored, it being so considerably injured by the unavoidable inhalation of this gas during the course of these experiments, which gives me ample reason to conclude, that the gas must be highly poisonous.

Enfurth, Feb. 1803.

To the Editors of the Medical and Physical Journal.

GENTLEMEN,

MR. DUNNING, in his Observations on Vaccination, has given an account of an eruptive disease, to which poultry are subject in the East Indies. It is called gooty, which signifies the small-pox. This account was communicated to Mr. Danning by Dr. Jenner.

Being informed by Capt. Money, that he had seen the disorder, I desired to know some particulars concerning it; and he favoured me with the following statement:

"When I was at Madras in 1794, I purchased twelve dozen of Pondicherry capons, with the intention of preserving them in Bengal for the homeward bound passage. They had not been long in Calcutta, before an eruptive disease made its appearance upon several, and, in the course of a month, extended to and annihilated the whole stock.

"The feathers on the back and breast of many dropped off; and the skin appeared perfectly red. Others died suddenly without loss of feathers; and all died without any diminution of flesh.

"Having related this remarkable instance of fatality, upon my return to the Coast, I was informed that it was not uncommon; that fowls were subject to a disease similar to the small-pox; and that, in some places, they were even inoculated, for the advantage of having it in a milder manner.

This account agrees in most respects with that received by Dr. Jenner from a gentleman who had resided many years at Bengal. That gentleman, however, stated, that inoculation was practised to lessen the evil, but in vain.

Dr. Ivory,

Dr. Ivory, who resided at Bengal twelve years, informs me, that turkeys are subject to a similar disease; which is called by the same name as the small-pox, gooty; and by the Hindoos matah, which is pronounced mawtaw.

Major Magra was told it was the small-pox, and that it always proves fatal. He landed twelve turkies from Sicily, and they all died. It is impossible to breed them at Tunis, although fowls are very plenty there.

I am informed by Major Magra, who resided six years at Tunis, in the character of His Majesty's Agent, and Consul General, that the same disease prevails among turkies on the Coast of Barbary. Their heads swell, and are affected with pustulous eruptions, and they become blind. The disorder is supposed to be infectious.

I have not been able to learn that the chicken-pox of the human species originates in the fowl from which it derives its name. It is probably so denominated only from its resemblance to that affection.

A popular opinion prevails in some parts of England, that the measles originate in swine, and are communicated by the brute animal to the human species. This, we have reason to believe, is a vulgar error; but the history of vaccination proves that popular opinions deserve attention. It is a popular opinion, that the chicken-pox, and the swine-pox, as it is called, in the human species, are two distinct diseases; we have the most respectable medical authority to the contrary; but some cases which I have seen, and others which I have heard, convince me that the subject is worthy of further investigation.

The chicken-pox is sometimes called by another name. Mrs. Wait, No. 6, Husband Street, Carnaby Market, informs me, that when she lived at Berkhamstead, her children had a disorder called the blisters; and that it was contagious. Hence it is probable that it was the chicken-pox, under another denomination.

This disease, however mild, assumes a certain degree of importance, in consequence of the probability of its being mistaken for the small-pox. No error is more common, or more serious than this. I therefore consider it a duty, to point out every mark of discrimination between the two disorders. In addition to others which I have noticed in my treatise on the cow-pox, I shall here mention one, communicated to me by Mr. Hurlock, namely, that the small-pocks have at first a depression at the apex, which the chicken-pocks have not; and hence it is common to hear the expression, the pocks begin to fill.

I can-

I cannot conclude, without recommending a little more attention to that "shadow of a disease," as it has been called, the chicken-pox; since there is no cause from which vaccination has suffered more, or more unjustly, than from this affection being mistaken for the small-pox.

I am, &c.

JOHN RING.

New-Street, Hanover Square, April 12, 1804.

Extract of a Letter from the Rev. Dr. Booker, *of Dudley, to a Friend in Gloucestershire, on the Subject of the* Cow-Pock.

EVERY instance of scepticism that I hear of, respecting the efficacy of Vaccine Inoculation, astonishes me nearly as much as if I heard a man deny that the sun is the source of light and heat in the visible creation. Thanks to a beneficent Providence and to Dr. Jenner, that most valuable discovery has triumphed over every species of incredulity throughout the very populous neighbourhood in which I live; where it was at first cautiously received, but is now universally adopted. In my own parish (containing about 14000 inhabitants) so salutary a blessing has it proved, that only one victim, *within the last two years*, has been seized by the small-pox; a baneful pest, which, for ages prior to vaccine inoculation, glutted the grave in every region of the earth; but which now only rages and destroys where prejudice or infatuation patronizes and befriends it. Soon would it be no more if these did not now and then furnish it with prey. Were *they*, however, who are actuated by these principles, restricted to select victims from their own children, parental feeling, methinks, agonized by the sufferings and death of those who are *bone of their own bone and flesh of their own flesh*, would speedily cure them of prejudice, or correct their infatuation.

Previous to the introduction of Dr. Jenner's great discovery among my parishioners, I have frequently read the funeral service over seven or eight victims of the small-pox in a day. The single instance of mortality, by the same disorder above mentioned, happened fortunately, I think, for the public. It was deemed an anomaly, an occurrence strange and unnatural by the neighbourhood; and by the parents as an event which *their* prudence might have prevented. Their feelings were, therefore, very acutely affected;

fected; no doubt severely charging themselves with being accessary to the death of the child, in not having shielded it from danger by vaccine inoculation.

May no other parent experience such painful reflections! And long may He live to enjoy his feelings, who has been the means, in the hands of Providence, of saving, and whose discovery, under the same Divine Power, will *continue* to save, thousands and tens of thousands of the human race!

March 14, 1804.

New Method of expelling the Tape Worm.

DR. DE BECK, Physician to the Emperor of Russia, has adopted the following method for expelling the Tape Worm, particularly that species with short and broad joints, (Taenia lata) The patient is to take, about four or five o'clock in the evening, the following powder, mixed with water or watergruel: ℞. Mercur. dulc. scr. j. corn. cervi usti, cinnabaris antimonii aa. gr. x. M. f. pulv. At night, after having taken some broth for supper, two ounces of the oil of sweet almonds are to be given. The next morning he is to take, before breakfast, *one* powder of the following mixture, which the Doctor calls *specificum*, in a tablespoon full of syrupus persicorum, after which he is to drink a cup or two of tea. ℞. Radic filicis maris dr. j. jalappæ, gummi guttæ, hb. cardui bened. corn. cerv. ust. aa. dr. ß. M. f. pulv. subtiliss. divid. in iij. partes æquales, s. specificum.

This powder generally occasions, within two or three hours, vomition, which however is much alleviated by drinking weak tea or some broth. The excrements discharged at the same time ought to be carefully examined, in order to see whether the whole tape worm, or only pieces of it have been voided; in which latter case the patient is to take a second powder; and should the whole tape worm not be expelled two or three hours after, the last dose of the specificum is to be given, by which the expulsion of the worm will certainly be effected. If the tape worm be voided early on the same day that the patient has taken the specificum, it generally shows signs of life on being put into a bason with warm water; but should it go off the day after, it is found dead in the stool.

To

To some patients the specificum neither causes vomition nor purging, though the worm is notwithstanding expelled. Sometimes the first dose of the specificum suffices for driving out the whole tape worm, but always succeeds with the second dose. In these cases the remedy occasions very little inconvenience to the patient, and he is generally able to walk about the following day and to attend to his usual occupations. But should the patient be obliged to take the last dose, the fasting and efforts of the stomach, the purging and the violent motions of the tape worm will produce debility and sickness of the stomach, which symptoms continue some time after, but are easily remedied. Young female patients, of a tender habit, have successfully gone through this cure, and often been well the following day, without having had recourse to any medical assistance.

Two hours after the expulsion of the tape worm, the patient is directed to eat something, and to take a glass of good wine; and also, if the worm should be voided, one hour after the last dose the patient may be allowed to take some food. The sickness of the stomach is soon removed by a cup or two of broth, or by a mixture of wine and water. As soon as the tape worm appears, care must be taken not to tear it off, for which purpose the piece hanging out may be wrapped in soft linen, or the patient ordered to sit on a flat vessel filled with four or five pints of luke warm milk, sweetened with sugar, into which agreeable liquor the worm will soon disentangle itself, particularly as the intestinal canal is impregnated with remedies highly disgusting to it. If the patient be weak and feels himself too much debilitated by the first dose of the specificum, the following doses may be diminished; and if the first does not sufficiently operate, one hour after he may be allowed to drink some broth. If the powder remains only one quarter of an hour in the stomach, its operation will certainly follow; but in case the remedy be immediately ejected, by the patient having an unsurmountable aversion to it, no operation is to be expected. Patients of a robust habit may take instead of the jalappa, hba. gratiolæ; and in case the tape worm does not go off the same morning, a clyster of bitter herbs saturated with Epsom salt may be administered. Should this however not sufficiently operate, the patient is to take the following powder in the space of three hours.—R. Pulv. rad. jalapp. dr. j. hb. gratiolæ, scr. j. M. f. dos. jjj. D.

To the Editors of the Medical and Physical Journal.

GENTLEMEN,

I Am sorry indisposition prevented me from replying to Mr. Ward's statement in your January Number, in the succeeding month. Intentional misrepresentation nothing can justify; being unconscious of the slightest design of this kind throughout all I have written on the subject of opium, I certainly deem no further apology necessary. I have, from Mr. Ward's first promulgating his thoughts on the matter (viz. in 1799) thought, and still continue to think, that there was a time when he deemed opium a tonic stimulant. It appeared evident to me from his early reasoning, and from his mode of practice. And is there any thing blameworthy that he, or any practitioner, should, from good premises, change their opinion? Do we any of us hold exactly the same opinion of every medicine in 1804 as we did in 1784? The full passage on which Mr. W. lays so much stress, as misquoted and injuriously misrepresented, runs thus: Vol. 6, p. 480—"Various cases have been recorded where it was thus introduced (opium by friction), and was found to exert its salutary virtues, so as to produce the most beneficial consequences (and, without occasioning those inconveniences which often arise from its internal use, especially in large doses), after the same medicine both alone and joined with OTHER antispasmodics, tonics, &c." Now I confess my stupidity in still being unable to view this passage in any other light than as a classification of opium with antispasmodics and tonics. Your Readers will judge for themselves; but to put the matter out of doubt, in my humble apprehension, nothing more is requisite than to give a short quotation from the P.S. to your 50th No. where Mr. W. says—"and that my choice was not at all directed by any opinion I had formed of the modus operandi of opium (for I confess I had not then paid sufficient attention to the subject to enable me to make up my mind upon it)." Thus Mr. W. acknowledges all for which I contend, after having held the subject before the public near five years. I can truly say, "Odi omnes in scribendo acerbitates." I never was ambitious of the particular notice of Mr. W.; I wrote what your indulgence has already inserted in my desultory manner for the public, well knowing its candour, and that medical novices particularly have never failed to meet that candour when their

their designs have clearly appeared to be the public good. Mr. W. long since claimed a right to be heard out, and then to be answered. In compliance with this claim, the Editors of the Journal suppressed the paper I sent them in April, 1803, till December. In November the public was favoured with Mr. W's case of cancer (still unconcluded) preliminary to the recital of which he expresses disappointment at his proposed definitions not being noticed, amended, or his opponent's sentiments given on so interesting a topic; and all this after requesting their silence until he could say, "and this is the conclusion of the whole matter." On perusing the paper upon cancer, I wrote a short one, containing some thoughts thereon, so far as opium was concerned, and on what I had before advanced respecting Mr. W's unsettled opinion, which, if you will indulge me by inserting now, will convince Mr. W. I had not been inattentive to his request in No. 50. I should instantly have cleared up this matter in April, had I not concluded my paper of that date would have been sufficient. I have already said I hate controversy; I have no ambition of this sort, but I will yield to no man, not even Mr. W. in my ambition to do good, in my endeavours to produce something practically useful to mankind. Should I ever gain this proud laurel of the medical man, my desultoriness will be pardoned, though I must add, it ill becomes an author to comment on such a fault, who has already taken nearly five years to explain his theory, and written near an hundred pages on the subject; and after all this, has not been willing, with all his time and talent, to attempt a refutation of one practical fact out of numbers adduced to disprove the hypothesis he has given to the public.

Chester, March 8, 1804.

I am, &c.

G. N. HILL.

REMARKS ON THE LAC SULPHURIS, *by* DR. PIEPENBRING, *of Cassell.*

THE preparation of sulphur, known under the name of lac sulphuris, or sulphur præcipitatum, has been considered in almost all modern pharmacopœias and works on materia medica, as not being different in quality from pure sulphur; to which it is said to be only preferred in un-

guents

guents on accont of its white colour. According to my observations, however, there seems to be a material difference in the chemical nature, as well as in the mode of operating on the living body, between this preparation and pure sulphur. Its extremely white colour seems to indicate, that by the previous solution and precipitation of sulphur something is either added to it or it has been deprived by that process of a certain substance. If the opinion of M. Van Mons be well grounded, who considers sulphur as an oxydated substance, we might be led to think, that the colour of lac sulphuris originates in a loss of oxygen; but this idea being not sufficiently confirmed, it seems rather probable, that it has received something to which the white colour is to be ascribed; I therefore adopt the following process in preparing precipitated sulphur. At the moment the sulphurated kali is infused with water, and the solution preparing to be made, part of the water is decomposed, and the oxygen, which is thus disengaged, adheres to a part of the sulphur, forming with it oxydated sulphur, while the hydrogen of the water combines itself with another part of the sulphur, thus forming sulphurated hydrogen; the whole mixture is in this manner changed to hydrogenated sulphurated kali, which consists of kali, oxydated sulphur, sulphurated hydrogen, and water; the caloric of the decomposed water being received by the sulphurated hydrogen, forms sulphurated hydrogen gas. On adding to this mixture any acid, viz. sulphuric acid, it is united with the kali, while the oxydated sulphur is separated, falling to the bottom in form of a white powder. The proximate constituents of this preparation are consequently oxydated sulphur, oxydated sulphurated hydrogen; and the remote constituents, sulphur, oxygen, and hydrogen. But whatever its chemical nature may be, it certainly seems to operate in a different manner on the animal economy; its action is quicker and more efficacious than that of pure sulphur; it is more easily digested in the stomach, and being less heating than common sulphur, it may be given in larger doses; it particularly promotes the alvine excretion, and being less disagreeable than sulphur, it may be continued for a longer time.

The best method of preparing lac sulphuris is the following. Take of pulverised sulphur two pounds, mix it with four pounds of pulverized pure kali, until they unite into an uniform powder. After being thoroughly dried, put it into an iron vessel, which has been previously heated on a coal fire. The vessel must be well shut. As soon

as

as the mass begins to melt, stir it occasionally with an iron spatula till a portion of it, when taken out, is soluble in hot water, which is a sure criterion of the process being finished. Take the vessel from the fire and let it cool; then pour eight pounds of water into it, stirring the mixture till the whole be dissolved; and when it is cold, pour it into a glass vessel and add two more pounds of water. In this vessel it must stand for two or three days, till it has obtained a yellowish colour. The solution of hydrogenated sulphurated kali is poured into another vessel, and the remaining sediment put on a piece of thick white linen, which has been previously moistened, and about 4 pounds of water gradually run over it. Meanwhile, mix 6 pounds of water with 2 pounds of white concentrated sulphuric acid, and let the mixture cool. Having added the water which runs over the sediment to the rest of the solution, gradually infuse into the whole mixture small portions of the diluted sulphuric acid, which must be continued as long as any effervescence is perceived. When the sulphur is in this manner precipitated, the liquor is suffered to run off and the residuum is properly edulcorated. The quantity obtained from the whole mass will be about 18 ounces; it will appear of a beautiful white colour.

Catalogue of such British Plants as have been found in any Shape serviceable to Man, whether in a medicinal, œconomical, culinary, or agricultural Point of View, together with an Account of the Uses which they have been made to answer, and an accurate Botanical Description of each Plant.

(Continued from our last, pp. 368—372.)

5. PINGUICULA. *P. vulgaris. P. Gesneri.*

Ang. Butterwort. Yorkshire sanicle.

Gen. Desc. Blos. gaping, ending in a spur. *Cal.* two-lipped, five-cleft. *Caps.* one cell.

Spec. Desc. Nectary cylindrical, as long as the petal. *Leaves* covered with soft prickles, secreting a glutinous liquor. *Blossom* violet, purple and reddish, and an ash-coloured woolly shot on the palate. *On bogs.* May.

Use. The juice of the leaves kills lice; and the common people use it to cure cracks or chaps in cows udders. It is made much use of by the inhabitants in the north of Sweden; the fresh gathered leaves are put into a filter or

 strainer

strainer, through which is poured milk warm from the rein deer, and the milk being sat by for a day or two, to become acescent, it acquires consistence and tenacity; the whey does not separate, nor does the cream, and in this state it is an extremely grateful article of food. Half a spoonful of this prepared milk, mixed with fresh warm milk, converts the latter into its own nature; and this again will have the same effect, and so on, without having recourse a second time to the leaves—*Linn.* It did not succeed with cow's milk—*Mr. Hawkes.* This plant is generally supposed to be injurious to sheep, and is imagined to occasion a disease which farmers call the rot. But it may be a question, whether the rot in sheep be so much owing to the vegetables in marshy grounds, as to a flat insect, called a fluhe *(fasciola hepatica)* which is found in these wet situations adhering to the stones and plants, and likewise in the livers and biliary ducts of sheep afflicted with the rot. From experiments made on purpose, and conducted with accuracy, it appears, that neither *sheep*, cows, horses, goats, nor swine will eat this plant—*Withering.*

6. Lycopus. *L. Europæus. L. palustris, pseudo marrubium palustre.*

Ang. Water hore-hound, hore-hound gypsey-wort.

Gen. Desc. Bloss. four-cleft; one segment notched at the end; *stamens* distant; *seeds* four, blunt.

Spec. Desc. Leaves indented, serrated; a little hairy. *Stem* with four corners and four hollow sides, hairyish. *Blossom* whitish with a tinge of purple, hairyish within, upper segment slightly notched, lower one with purplish spots at the inside; between the stamens frequently two or three shorter filaments, generally without anthers. *Germen* on a yellow glandular receptacle. *Flowers* several together, in the bosoms of the upper leaves. *Branches* opposite, rising from the bosom of the leaves. *In sandy ground on the banks of streams and ponds. Bloss.* July, Sept.

Use. It dyes black, and has been used with linen and clothes. The juice gives a permanent colour to linen, wool, and silk, which will not wash out. Travelling gypsies use it to stain their faces. Sheep and goats eat it; cows and horses refuse it.

7. Orchis. *O. mascula, satyrion in Pharm. Ed. Cynosorchis moriomas.*

Ang. Early orchis, male fool-stones.

Gen. Desc. Bloss. gaping; nectary like a horn behind the flower.

Spec

Spec. Desc. Lip of the nectary four-lobed, finely scolloped, dotted at the base; horn blunt; upper petals turned back. Bulbs oval, entire, fixed to the base of the stem. *Leaves* spear shaped, bright green, and shining above, sea-green underneath, with longitudinal parallel veins, usually with dark brown spots: Floral leaves longer than the germen. *Flowers* purple, rarely white, numerous, the outer petals bent back, not at all approaching the helmet, rather pointed; the middle one expanding and lying over the two lower ones, which approach closely and are of a paler colour. *Stem,* twelve to fifteen inches high. *In meadows and pastures.* Bloss. May.

Use. This plant has a place in the materia medica of the Edinburgh Pharmacopœia, on account of the root, which abounds with glutinous slimy juice of a sweetish taste: To the smell, faint and somewhat unpleasant. This mucilaginous quality of the root has recommended it as a *demulcent,* and it has been generally employed with the same intentions and in the same complaints as the root of althæa and gum arabic—*Woodville.* Of the root of this species of orchis it is now known that salep is made, which has been hitherto imported from Turkey, and from the East, at a considerable expence. Dr. Percival has published, on the authority of Mr. Moult, of Rochdale, the best method of curing the orchis root; and recommends the process from his own knowledge of its success, adding that he had seen many specimens of salep thus prepared, equal, if not superior, to any imported from the Levant. The root should be gathered when the seed is formed, and the stalk is about to fall, for then the new bulb, of which the salep is made, is arrived at its full size, and may be distinguished from the old one by a white bud rising on the top of it. The new root is to be washed in water, and the fine brown outer skin taken off by means of a small brush, or by dipping in hot water and rubbing it with a coarse linen cloth. The roots thus cleaned are to be spread on a tin plate, and placed in an oven heated to the degree of a bread oven, where, in six or ten minutes, they will have acquired a transparency like horn, without any diminution of bulk. In this state they are to be removed to harden and dry in the air, which will require some days to effect; or by a very gentle heat they may be finished in a few hours—*Percival.* As an article of diet, salep is accounted extremely nutritious, and has been thought fit to constitute a part of the provisions of every ship's company, to prevent famine at sea. An ounce of this article, together with the

same

same quantity of portable soup *(the dried gelatinous part of flesh)*, in two quarts of boiling water, will afford a man sufficient subsistence for a day—*Woodville*. Several authors have recommended the use of salep in *diarrhœa, dysentery, dysury*, and *calculous* complaints; but in the symptomatic fever, which arises from the absorption of pus, from ulcers in the lungs, from wounds, or from amputations, salep is an admirable demulcent, and well adapted to resist that dissolution of the crasis of the blood, which is so evident in these cases—*Percival*. Salep, prepared as above, may be sold for less than a shilling a pound; and it is to be hoped we shall no longer be supplied, at a high price, from foreign markets, with an article that our own country can supply in almost any quantity.

Mr. Mault made his experiments on the roots of the *O. Mascula* only; but those of the *O. Morio* are equally proper for the purpose, and it is probable that every species of the plant may be used indiscriminately—*Withering*. It must be propagated by the roots, for the seeds seldom come to perfection. These roots have been noticed ever since the time of Dioscorides for their supposed aphrodisiac qualities.

8. Salix. S. triandra.

Ang. Smooth willow.

Gen. Desc. *Catkin*, each scale containing one flower. Bloss. none. *Male*, a nectariferous gland at the bottom of the flower.

Female. Style cloven; caps. one cell; two valves; seeds downy.

Spec Desc. *Leaves* oblong, spear-shaped, tapering; the lower ones dark green, paler underneath, serrated, one to three inches long, on leaf stalks. *Flowers* with three stamens, sometimes two. Male catkins conical, changing to cylindrical, upright, one to one and a half inch long; fruit stalks half an inch long; nectaries 2. Fem. catkin slender, upright; fruit stalks one inch long. *Stem* six feet high and more, smooth, yellowish green, branching; upper branches shortest, often spotted with red. The female plant is rare. *Woods, hedges, or banks of rivers.* Bloss. April.

Use. The bark, in doses of one or two drachms, has been found efficacious in curing the ague, as a substitute for Peruvian bark.

9. Salix. *S. pentandra. S. hermaphroditica.*

Ang. Sweet willow. Bay leaved willow.

Gen. Desc. *As above.*

Spec.

Spec. Desc. Leaves egg shaped, acute, yellowish green, pour out at the edges a yellow gum from each tooth; glossy; in hot weather exhale an odoriferous perfume; eleven on barren, six or eight on fertile shoots. *Flowers* with five stamens. Catkins very yellow, sweet scented. *Nectaries* three, sometimes wanting at the extremity of the catkin, and supported by three perfect stamens. Stem six, ten, or twelve feet high; branches yellowish purple. *Woods and Hedges.* Bloss. April.

Use. The bark is an astringent, and has been used as a substitute for Peruvian bark. The leaves dried afford a good yellow dye. The branches are cut to make springles: it is much used in Yorkshire for the largest baskets. Sheep and goats eat it. The wood crackles in the fire.

10. Salix. *S. fragilis.* *S. folio longo latoque splendente.*

Ang. Crack willow.

Gen. Desc. *As above.*

Spec. Desc. *Leaves* egg-spear-shaped; leaf-stalks toothed with glands. A tall tree. Bark wrinkled, grey. The branches, struck with the finger, break off at the shoot of the present year. *Woods, hedges, river-banks.* Bloss. April, May.

Use. The bark is astringent and bitter; hence it has been thought a good substitute for Peruvian bark, and has been found to stop the paroxysms of *intermittents*; it is likewise recommended in other cases requiring *tonic* or astringent remedies, and has been admitted into the Edinburgh Materia Medica. The bark of some other species of salix possess similar qualities, but that of S. triandria is the most effectual of any of this genus.—*Woodville.* The bark, in doses of one or two drachms, will cure agues.—*Med. Com.* It thrives in any soil if sufficiently moist, grows quick, and bears cropping.

11. Salix. *S. alba.*

Ang. Common willow. White willow.

Gen. Desc. *As above.*

Spec. Desc. Leaves spear shaped, tapering to a point, sharply and elegantly serrated, shining but pubescent above, white and silky underneath.

M. catkins cylindrical, blunt, one inch and a half to two inches long, on fruit stalks half an inch long.

F. cat. slender, two inches long, fruit stalk one inch, stamens two, nectaries two. A tall straight tree this, with the s. fragilis, being the largest trees of the kind; the bark grey, cracked; branches numerous, upright, expanding, grey,

grey, or brown green. Inner bark green. *Woods, hedges, and wet pastures.* Bloss. April.

Use. An account of the efficacy of the bark of this tree in curing intermitting fevers, has been given by the Rev. Mr. Stone. He gathers the bark in summer, when full of sap, dries it by a gentle heat, and gives a drachm powdered, every four hours between the fits. In a few obstinate cases he mixed one-fifth of Peruvian bark, *Phil. Trans. liii. p.* 195. It is remarkable that in wet situations, where intermittents are most prevalent, this tree grows naturally. From the present high price of Peruvian bark, and the scanty supply of that article from S. America, hardly equal to the consumption, the *white* willow bark is likely to become an object worth the attention of physicians, if its success upon a more enlarged scale becomes equal to Mr. S's experiments, to whom the world will be much indebted for the communication. The bark of other species having the same properties, it would be useful to ascertain by experiment, which should be preferred. This bark will tan leather. Horses, cows, sheep, and goats eat the leaves and the young shoots. Bees are very fond of the flowers.—*Withering.*

The bark will dye yarn of a cinnamon colour; and is of so *astringent* a quality that one scruple has been of much service in intermittents. A decoction of it, used as a bath, is affirmed by Haller, from his own experience, to have been very beneficial to ricketty children. The inner bark is used in Kamschatka as a miserable substitute for bread. From the catkins of every species of salix, which has fragrant catkins, the Arabs distil their celebrated caluf water, which they use as a cooling liquor or as a febrifuge.—*Lightfoot.*

12. Fraxinus. *F. excelsior.*

Ang. Common ash tree.

Gen. Desc. Calyx none, or with four divisions. Blossom none, or with four petals. Female and hermaphrodite flowers. Pist. one, caps. two-celled, leaf-like upwards, compressed; one cell barren. Seed spear-shaped.

Spec. Desc. Leaf is serrated; flowers without petals. *Leaves* opposite, on leaf stalks; (sometimes simple) *leafits* sitting, four or five pair with an odd one. Some trees produce only male flowers, some only female, and some hermaphrodite. *In woods and hedge-rows.* Bloss. March to May.

Use. The bark and seeds are reckoned diuretic.—*Lightfoot.* An infusion of the leaves, from half an ounce to an

ounce

ounce and a half is a very good *purge;* and a decoction of two drachms of the *bark,* or of six drachms of the *leaves,* has been used to cure agues. The seeds are acrid and bitter. The *bark* is used for tanning calf-skin. A slight infusion of it, viewed between the eye and the light, appears of a pale yellowish colour, but if looked down on, or placed between the eye and an opake object, it is blue. Acids destroy this blue colour, and alkalis recover it again. The *ashes of the wood* afford very good potash. The wood has the singular advantage of being nearly as good when young as when old. It is hard and tough, and much used for tools in husbandry. The roots run near the surface, and extend themselves to a great distance, whence it is destructive to the herbage in upland pastures, but on the margins of ditches or low meadows, the roots act as under-drains, and render the ground hard and firm; but in this case the wood is of little value. It will give a good, though not a beautiful green to cloths that have been blued. In the North of Lancashire the tops of this tree are used in Autumn, when the grass is on the decline, for the food of cattle, which peel off the bark to eat. In very dry summers the leaves are used to feed cows sometimes in Staffordshire. Horses, cows, sheep, and goats eat it, but it spoils the milk of cows, and should not be planted in dairy farms.—*Withering.* In Queen Elizabeth's time, the inhabitants of Colton and Hawksheadfells, remonstrated against the number of forges in the country, because they consumed all the loppings and croppings, the *sole winter food* for cattle.—*Pennant.* From this tree in warm climates exudes the sweet gum, sold as a gentle *cathartic* by the name of manna, though not so abundantly as from the F. ornus.—*Lightfoot.* In the church-yard of Lochaber, Dr. Walker measured the trunk of a dead ash, which, at five feet from the ground, was fifty-eight feet in girth.

CLASS III. TRIANDRIA.

Triandria, Monogynia.

1. VALERIANA. *V. officinalis. V. sylvestris. V. Sylvestris major.*

Ang. Valerian, great wild valerian.

Gen. Desc. Calyx none. Bloss. 1 petal, superior, gibbous at the base on one side. Seed 1, or else a three-celled capsule.

Spec. Desc. Leaves winged and toothed. *Blossom,* pink. Upper floral leaves spear-shaped. *Hedges, woods, marshes, commons.* BLOSS. June.

Use. It is a *variety* of this species with narrower leaves, which has so great repute as a medicine; it does not exceed two feet in height, and loves dry heaths and pastures. The root has a strong, disagreeble smell, and a warm, bitter, sub acrid taste, both which it communicates to wine, water, or spirit. It possesses *antispasmodic* virtues in an eminent degree.—*Withering.* Its efficacy in *epilepsy* is proved by many instances recorded by a variety of writers; and it has been found highly serviceable in other complaints, termed nervous, particularly those produced by increased mobility or irritability of the nervous system. Bergius states its virtues to be *antispasmodic, diaphoretic, emmenagogue, diuretic, anthelmintic.* Dr. Cullen attests its antispasmodic powers. The root, in substance, is most effectual, and is usually given in powder from a scruple to a drachm.—*Woodville.* It may be taken from half a drachm to two drachms for a dose.—*Withering.* In habitual costiveness it is an excellent medicine, and frequently loosens the bowels when stronger purgatives have failed. Cats are delighted with the smell of the roots, and rats also, insomuch that rat-catchers employ them to draw rats together.—*Withering.* Cows eat the leaves, sheep refuse them.

2. Valeriana. *V. locusta.*

Ang. Lamb's lettuce. Corn sallad. Lettuce valerian.

Gen. Desc. *As above.*

Spec. Desc. *Stem* forked. *Leaves* strap-shaped, entire, (in some varieties serrated, or jagged) fringed with white hairs as well as the stem. *Blossom* bluish white. *Common in corn-fields.* Bloss. April and July.

Use. The young leaves in spring and autumn are eaten as sallad, and are very little inferior to young lettuce. Cattle eat it.

3. Bryonia. *B. dioica.* *B. alba.* *B. aspera.* *B. alba vulgaris.*

Ang. Bryony, red-berried bryony, wild vine.

Gen. Desc. Calyx five-toothed; bloss. five divisions; male anthers united at the base. Female, style three-cleft; berry roundish, mostly one-seeded.

Spec. Desc. *Leaves* imperfectly hand-shaped, rough on both sides, with callous points. Male and female flowers on different plants. Barren and fertile plants rarely grow near together. *Blossom* yellow with greenish streaks. *Berry* red. *Seeds* three to six. *Hedges and thickets.* Bloss. May.

Use. Both the root and its juice, (which, in spring, if the top

top of the root be bared of earth and cut transversely over, is thrown up in abundance for two or three days,—*Lewis*) have a disagreable smell, and a nauseous, bitter, biting taste, and if applied to the skin they inflame or even vesicate the part. Bergius states this root to be *purgans, hydragoga, emmenagoga, diuretica,* and recommends it in *dropsy* and *asthma.* This powerful and irritating cathartic, now seldom prescribed, is said to be of great efficacy in evacuating serous humours, and has been chiefly employed in hydropical disorders, (two drachms have been given in dropsy with success,—*Lightfoot*). Instances are mentioned of its good effects also in asthma, mania, and epilepsy. In small doses it is said to act as a diuretic and to be resolvent and deobstruent; in powder, from a scruple to a drachm, it is strongly purgative; the juice has a similar effect but more gently. An extract, prepared by water, acts more mildly and with greater safety than the root in substance, and given from half a drachm to one drachm infused in wine, half an ounce is a full dose.—*Withering.* Externally the fresh root has been employed in cataplasms as a resolvent and discutient, also in ischiatic and other rheumatic affections.—*Woodville.* A cold infusion of the root in water is used externally in sciatic pains; a cataplasm of it is a most powerful discutient. A decoction made with one pound of the fresh root is the *best purge for horned cattle.* The active virtues of this plant seem to claim more attention than is now bestowed on it.—*Withering.* Goats eat it. Horses, cows, sheep, and swine refuse it.—*Linn.*

4. Crocus. *C. sativus. C. officinalis. C. officinalis autumnalis.*

Ang. Saffron, common, or autumnal saffron.

Gen. Desc. Bloss. six equal divisions, summits coiled.

Spec. Desc. *Sheath* one valve rising from the root; tube of the blossom very long. *Blossom* purplish blue; filaments purple; summits deep orange, germen cylindrical. *Cambridgeshire, Essex, and near Derby.* Bloss. August, and September.

Var. C. vernus, or C. officinalis sylvestris, spring saffron, or crocus, leaves broader, flat edges. Blossom both yellow and blue. Bloss. March.

Use. The summits of the pistils of the *crocus offic.* is the saffron of the shops, carefully collected and moderately dried, in the following manner. In autumn the flowers are gathered in the morning, and the summits with a portion of the style are picked off, and dried by means of a sort of portable kiln, of a peculiar construction, over which

which is spread a hair-cloth; this is covered with white paper, on which the summits are placed, two or three inches thick, then covered again with several sheets of paper, over which is laid a blanket, five or six times folded, or a canvas bag filled with straw; on this, when the kiln is heated, a board with a weight on it, is placed, to press the saffron into a cake. For the first hour a pretty strong fire is employed; the saffron is then formed into a cake, which being turned is subjected to the same heat for another hour; it is then turned again; and for twenty-four hours, or till it becomes dry, a gentle heat is applied, turning it every half hour. English saffron is preferred to any imported, and is distinguished by its parts being larger and broader. It affords a beautiful colour to water, wine, or spirit, and gives out the whole of its virtues, and three-fourths of its substance to them. Schroder asserts, that in the quantity of two or three drachms it proves fatal, and it has been said to produce intoxication and madness; it is said to penetrate every part of the body, tinging with yellow the solids and excretions, and to have, even by its odour or effluvia, produced deleterious effects; it has been considered as a most exhilarating cordial, and has been supposed to have much efficacy as an *emmenagogue*, as a *diaphoretic*, and as an *antiseptic*; but modern practice pays no great attention to it, since it has been found to produce no sensible effect, even in very large doses.—*Woodville, Withering, Cullen, &c.* It was held in high estimation by the Hebrews, who called it Carcom; and by the Arabians, by whom it was named Zaffaran. It has a powerful penetrating smell, and a warm, pungent, bitter taste.

5. Iris. *I. pseudacorus, I. palustris, Acorus adulterinus, A. palustris.*

Ang. Water flag, yellow flag, flower de luce, yellow water flower de luce, Sedge.

Gen. Desc. Bloss. six div. alternate segment bent back as if jointed. Summits petal-like, two-lipped, edges at the base turned in.

Spec. Desc. Alternate segment of the blossom smaller than the summit. *Blossom* yellow. *Petals*, the three outer toothed on each side, and streaked with purple. *Germen*, edges furrowed; summits cut into fringed segments at the top. *Valves* of calyx spear-shaped. Flowers three together at the top of the stem; two outer flowers, with each one sheathing valve, the middle flower two. This flower has the appearance of nine petals. *River-banks, marshes, wet meadows.* Bloss. July.

Use,

Use. The root has an acrid styptic taste, and its juice snuffed up the nostrils, produces a burning in the nose and mouth, with a copious discharge from these organs; hence it is recommended as an *errhine* and *sialagogue.* The root well dried is a powerful *astringent,* and has been successfully used in the cure of diarrhœas; but the fresh root and its juice are strongly *cathartic,* insomuch that 80 drops of the latter given every hour or two *(by Dr. Rutherford, Ed. Med. Ess. vol. v. p. 94,)* produced repeated evacuations after the most powerful purgatives had failed, and by its continued use in increased doses, cured a violent dropsy.—*Woodville.* But the degree of its acrimony is so uncertain that it can hardly ever come into general use; the juice expressed from the old roots is the most active. In some cases it is *diuretic.* The fresh roots have been mixed with the food of swine bitten by a mad dog, and they escaped the disease, when others bitten by the same dog, died raving mad.—*Withering.* The root dried has been used instead of galls in making ink, and also in dying black. For the latter purpose it is employed in the island of Jura.—*Pennant.* In Mull and other parts of the Highlands, the root of this plant is used to cure the tooth-ach, or any inflammation of the throat; a piece about the size of a nutmeg is bruised in a mortar with a handful of daisies; the juice is strained through linen, and a tea-spoonful of it poured into each nostril. It is immediately followed by a kind of salivation which often effects a cure, but not without great danger of cold.—*Lightfoot.* The expressed juice is said to be an useful application to serpiginous eruptions and scrophulous tumors.—*Murray Ap. Med. vol. v. p. 277.* Goats eat the fresh leaves; cows, horses, and swine refuse them; cows will eat them when dry. The juice of this root as well as of the *Iris fœtida, stinking flag, or stinking gladwyn,* have been used to excite sneezing, but it is a dangerous practice, and sometimes produces violent convulsions.

6. SCIRPUS. *S. lacustris.*

Ang. Bull rush, club grass.

Gen. Desc. Husks chaff-like, tiled on every side; bloss 0, seed one; three-cornered, woolly.

Spec. Desc. *Straw* cylindrical, naked; spikes several, egg-shaped, on fruit stalks, terminating; calyx fringed three-cleft. *Rivers, pools, fens.* BLOSS. July, August.

Use. When fodder is exhausted, cattle will live upon it. Cottages are thatched, and pack saddles stuffed with it. Chair-bottoms are also made of it; cut at one year old it makes the fine bottoms; at two the coarser; and at a

greater age, mixed with the leaves of Iris pseudacoras, the coarsest bottoms. Mats are also made of it, either alone or thus mixed. Goats and swine eat it. Cows and sheep refuse it.

7. Scirpus. *S. maritimus.*
Ang. Salt marsh club grass.
Gen. Desc. *As above.*
Spec. Desc. *Straw* three-cornered; panicle close, leafy; scales of the spickets three-cleft, middle segment awl-shaped. *Leaves* stiff, sharp at the edges. *Panicle* sometimes branched, sometimes simple. *Spikes* oblong, rusty iron coloured. *Seeds* the same colour, egg shaped, compressed, tapering. *Sea-coast.* Bloss. August.

Use. The roots dried and ground to powder have been used as a substitute for flour in times of scarcity. Cows eat it.

8. Cyperus. *C. longus, C. odoratus radice longâ.*
Ang. Sweet cyperus, English galingale, long cyperus.
Gen. Desc. *Husks* chaff like; tiled in two rows. Bloss. 0. Seed 1, naked.
Spec. Desc. Straw three cornered, leafy; *Umbel* leafy more than doubly compound. *Fruitstalks* naked, sometimes twelve or thirteen, forming a sort of umbel. *Spikes* alternate; *little spikes* slender, chesnut coloured. Bloss. May.

Use. The root is agreeably aromatic to the smell; warm and bitter to the taste. In modern practice it is disregarded; but perhaps it is not inferior to some of the most costly medicines brought from abroad.—*Withering.* The roots are carminative and attenuant; they promote the menses, and are useful in chronic cases arising from obstructions of the viscera.—*Hill.*

[To be continued.]

To the Editors of the Medical and Physical Journal.

Gentlemen,

I Herein send you a drawing of a very curious insect, an account of which, I shall be glad if you can admit into the next number of your useful Miscellany. As it may possibly draw forth the observations and opinions of some of your Correspondents, I shall not commit myself by giving

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ing any opinion of my own; but only state such circumstances as I could collect from a narrow investigation of the subject.

On the 27th ult. Nurse L. of this town, took an emetic of her own accord, to relieve her of a giddiness. The emetic occasioned considerable efforts to vomit, without bringing any thing up but the warm water which she drank during its operation. At length, from straining, the left eye and nostril suddenly swelled, and about a tea-spoon full or two of blood flowed from the nostril, followed by the insect, which fell upon the hearth, besmeared with blood. It was alive, but soon died. Both Nurse L. herself and a neighbour who stood by, *believe* the insect came from the nostril; though they cannot undertake positively to say, whether it might not come from the stomach in vomiting. However they would not hesitate to make oath, that it came either from the mouth or the nose.

That your readers may form their own judgment of the matter, it is necessary to state, that Nurse L. has been subject for about seven years to sudden vertigos, with a considerable pain at times across the top of the nose, which were succeeded by a fit of epilepsy, one of which she had on the day she took the emetic. About six years ago, when attacked in this way with vertigo, she hung herself, and was taken down apparently dead. I attended her at that time, and restored her by the usual means. Within these few days, I have questioned her as to the cause of her commiting that rash act; and she declares that she can give no other reason, than that she "*did not know what she was about.*" She was constantly picking the left nostril, but it does not appear that she had ever any *particular* disposition to sneeze. It must also be remarked, that she frequently complained of a pain in her stomach, and is a woman much given to intoxication, to which cause her giddiness and fits have been commonly attributed.

The person who took a drawing of the insect, viewed it in a vial of spirits of wine, in consequence of which the figure here sent is somewhat magnified. The insect itself is not quite an inch in length and rather less in circumference than the figure appears. The colour is a light straw, its length is divided by twelve rings of a darker shade, and at irregular distances.

I refer

I refer your readers to Vol. 6. of the Edinburgh Medical Essays, for an account of two centipeds discharged from the nose, one of which is said to have been in the *frontal sinus;* but we are not informed how that fact was ascertained. I am, &c.

Kidderminster, March 8, 1804. GEO. CUSTANCE.

P.S. This insect, when viewed through a microscope, is found to be very hairy about the head and tail, and its feet to have each a black *claw*.

EXPLANATION OF THE DRAWING.

A. The head. B. Six feet. C. Two short antænæ.
D. Uncated projection from the tail.

To the Editors of the Medical and Physical Journal.

GENTLEMEN,

A Case occurred lately in this city of a female child so young as five years being infected with the venereal disease; it had it in the form of buboes and chancre, and it had also gonorrhœa.

The child was treated in the usual manner for all these complaints; the buboes did not suppurate, and seemed frequently to be inflamed by the irritation of the discharge from the vagina, but when the discharge at last entirely ceased, the remaining swellings were removed by mercury rubbed on the skin in the course of the lymphatics; it was used to the extent of two ounces of the ung. hyd. fort.

Besides all these appearances, there was the most positive proof of a person, who lived in the house with the child, having inveigled it to his bed, of his having at different times endeavoured to perforate the vagina, and also of his having had the disease in question on him at the time he did it. All these circumstances were fully and clearly stated before a very respectable jury, and the person so accused accordingly found guilty.

But what will be thought extraordinary is, that a medical practitioner, who knew all that I have here related, came forward on the trial in behalf of the prisoner, and gave it as his opinion, that the buboes were scrophulous, and that females of *all* ages were subject to fluor albus.

The chancre was not insisted upon by the evidence for the

the plaintiff, as mercury had been used before he saw it, and of course the appearance altered; but to a *medical* court it could positively have been proved by the treatment and *other* appearances.

As no other practitioner would corroborate this evidence (several of great respectability having seen it and given what I have related as their opinions) he introduced Dr. Underwood's publication on the Diseases of Children, in support of what he asserted; notwithstanding which, the circumstances were so strong and so well proved, that (as I have said before) the person accused was found guilty.

But as there is a possibility of the book being again produced on such an occasion, I think it proper that the opinion there given should be either *confirmed* or *confuted*. I will therefore quote the passage which relates to the present subject, *verbatim et literatim*, and will then venture to make a few observations on it.

"*Discharges from the Vagina.*

"These are either sanguineous, mucous, or purulent; as I speak professedly only of appearances before the age of puberty, I have merely to remark on the first, that female infants have sometimes such a discharge from the vagina a few days after birth, which appears to be of no consequence.

"Should it however on any account be thought necessary to prescribe *something*, a little testaceous powder, or magnesia, according to the state of the bowels, will be sufficiently astringent, as the discharge always disappears in a few days.

"Children of five or six years old are subject to a mucous discharge resembling the *fluor albus* of adults, which will in some instances be in an excessive quantity, so as to run through all their clothes, and is sometimes, though rarely, tinged with blood; if it were suffered to continue it would *probably* injure the health, but I believe may always be cured by one or other of the means recommended for the next, which may be called *purulent gonorrhœa*.

"This (I suppose he means purulent gonorrhœa) is no uncommon complaint in children of three or four years old, and is then, in general, easily removed by a little cooling physic, and keeping the parts perfectly clean. I have sometimes made use of a lotion of the compound water of acetated litharge, which I believe is preferable to most others, if had recourse to in the commencement of the complaint; and if there be any excoriations, they

 should

should be covered with the ung. cerussæ acetatæ, spread upon lint.

"When the purulent discharge makes its appearance later, which it will do at eight, ten, or even twelve years of age, and is much discoloured and fetid, it gives rise to a suspicion which young practitioners cannot be too guarded against. There are, indeed, instances of little girls, not more than six years old, being injured, and it is of consequence to make a judicious discrimination; but there are, on the other hand, instances of a very suspicious appearance as late as the age of *thirteen* or *fourteen*, where no injury could be received without the consent of the party, who is generally perfectly innocent, and where, therefore, the least suspicion would be *very distressing* to her, and might make a whole family miserable.

"Discharges with the worst appearances are frequently removed in eight or ten days, merely by the treatment above recommended, but I have seen cases in the youngest subjects, of a bad habit, where mercury as a *deobstruent* has proved useful, though I could not have the *least suspicion* of a venereal taint. In such cases I have found Ward's white drop a more convenient medicine than any other preparation of mercury; it may be given in the dose of half a drop, and may by degrees be increased to two, and even three drops once or twice a day for two or three weeks; but where this has failed, I have only to add that I have always been able to succeed by giving a decoction of the bark, with balsam. capaibæ ovi vitel. solut. which is always an admirable medicine in the *fluor albus* of adults." Underwood on the Diseases of Children, vol. ii. p. 104.

The following note is subjoined:—"Induced by motives of humanity, I hope I may be permitted to add a word or two to *professional readers*, whose prudence and information may not only prevent a vast deal of unnecessary distress to MANY worthy families, but may even save the life or character of another party suspected of criminality; for besides MANY CASES wherein *inattention* or *ignorance* might give rise to injurious suspicions, there are cases which call for much experience and attention in order to form a just and decided opinion."—"I have indeed known the discharge to be so ill coloured and fetid, and attended not only with pain, *inflammation*, and *excoriation* in different parts; but such *tumour and other appearances of violence offered* about the *furca*, that had the patient herself advanced any charge, I fear I should not have hesitated to have joined in with it; and yet from the event, as well

well as the whole history of the case, *it had been very evident that no kind of injury had been received.*"

Now I leave it to the candid decision of the whole medical world, if it is not probable that any "young practitioner," who had not been in the habit of attending hospitals, would not on a perusal of the part of Dr. Underwood's book just quoted, instantly suppose that a *spontaneous* discharge from the vagina of young children was a *very* common occurrence, so much so as to make at least a proportion of one out of every five hundred children of every description, and yet I am certain (if any such thing at all exists) from conversations I have had with medical practitioners of very extensive practice both *public and private,* I say I am certain that if any such thing as a *spontaneous* discharge (that is to say without bruise, infection, or the like) from the vagina of *very young* children *ever* occurs, it is not in a greater proportion than one out of *five thousand* patients taken indiscriminately; that there is *a* discharge a great deal more frequently seen from the vagina of young children I believe, because I have heard it from those of undoubted veracity; but I will say, they did not *all* arise *spontaneously;* and however disagreeable the truth may be, *a great proportion of them arose from infection,* the source of which never was investigated.

I do not by any means pretend to insinuate that *criminality* was necessarily attached to any person; for, as I observed in the present case, in Court, "an unwashed hand would produce it." That Dr. Underwood's motives for writing as he did were good, I am ready to allow; but I must beg leave to observe, that no practitioner of extensive practice ever *did* or *could* be brought to believe that the combination of symptoms he describes, and also the appearances, was a *frequent* occurrence in *young children* without someway or other infection having been applied to the parts; if it was not too serious a subject it is almost enough to excite laughter (in a medical reader) to read his enumeration of symptoms, and then the extraordinary conclusion he draws from them.

It is much to be regretted that Dr. U. out of so great a *variety* of cases as he seems to allude to, has not at least related *one* in which the symptoms most like gonorrhœa existed, and he could there have *instructed* the "ignorant and inattentive" in the means he employed with such success, to find out that infection had never been applied.

As to my own personal knowledge, all that I can say is, that in an attendance of several years at a large hospital in

 Dublin,

Dublin, I saw so little of the kind, that if I had been where I could ask no other person, I should infer from reading Dr. Underwood's book on the subject of "Discharges from the vagina," that he was speaking of an *endemic* in the Lying-in Hospital of London; I understand from those who attended the Lying-in Hospital of *Dublin*, that venereal ophthalmia is there sometimes seen with new-born infants, and this is accounted for in a very easy manner.

Does it not seem very probable, that the gonorrhœa mentioned by Dr. U. could be much more frequently accounted for in this way than by having recourse to an explanation so very contrary to general experience?

As to his "motives of humanity," I appeal to those who possess in the most *eminent* degree that virtue, what *kind* of humanity it would be in the present instance to have forborne the investigation? the consequence of which might have been, allowing the guilty person to reside under the same roof with the unfortunate infant, who perhaps, when *cured*, would have been *again* infected, or some of her *sisters* have been treated in the same manner.

I agree entirely with Dr. Underwood, that if the investigation does not in a manner offer itself, it would be better to say nothing about it; but surely that is no justification for inculcating erroneous opinions, for I will conclude by asserting, that a discharge of any kind from the vagina of very young children is an extremely rare occurrence.

Let us act as humanely as possibly towards both our patients and their relations, but let *no consideration* induce us to heap error on a science already over-burthened with it, and to eradicate which so many *ingenious men* are at this moment labouring. I am, &c.

LODGE HALL, Surgeon, (Medical Staff.)

Cork, April 8, 1804.

To the Editors of the Medical and Physical Journal.

GENTLEMEN,

THE reason of my now troubling you, is to remark some critical observations of Mr. Fogo, in your Journal, No. 59, p. 67, on a paper of mine concerning the delivery of the placenta, which you have done me the honour to insert in a former number.

In the first place, he seems dissatisfied with the application

tion of the term morbid. I cannot, I confess, agree with him as to its impropriety, notwithstanding all the arguments he has advanced on the subject. I conceive morbid and diseased to be synonimous terms. Mr. F. supposes it probable that " the placenta remained partly attached to the uterus from its *atonic state*." He will not surely contend that atony is not a disease. Every circumstance occurring contrary to the usual economy of Nature, so as to derange the animal system, may be justly, I think, called *morbid* or diseased. The retention of the placenta, arising from an " atonic state of the uterus," is not certainly to be considered as a *natural* circumstance, and might therefore with propriety be termed morbid. As it is, however, of little use to cavil about words, I shall proceed to consider the more important parts of the case.

Mr. F. is of opinion, that hæmorrhage still continued to exist during the four hours the placenta was retained, and that I gained no advantage by the delay, as the patient *could not* increase in strength. Both these positions I positively deny. The placenta adhered to the fundus uteri, and did not " block up the vagina." If hæmorrhage did exist, there was sufficient room for the blood to have escaped in a fluid state, and consequently it would have appeared externally. The clots I removed did not, as Mr. F. has conjectured, nearly amount in weight to " two pounds or one." It did not exceed what might be expected to have coagulated (during the hæmorrhage, which succeeded the birth of the child) from the recumbent posture of the patient, and was afterwards propelled into the vagina by slight contraction of the uterus.

As to the strength of my patient, it evidently increased to a very considerable degree; during the time I waited, she had recovered in a great measure from that debility I observed on my first arrival, before I attempted to remove the placenta; her pulse, at first excessively weak, was become tolerably strong and regular; her spirits repaired, and her countenance no longer exhibited that cadaverous appearance I described. I may therefore, I think, fairly presume from these circumstances, that no hæmorrhage did then exist. Her importunities for the removal of the placenta (to which Mr. F. attributes her salvation) were the effects of weariness from remaining so long on the bed in an uneasy posture, and a consequent wish of being changed and placed in a more comfortable situation. The subsequent faintings were, I conceive, occasioned partly by the pain felt from the introduction of my hand into the uterus, which had somewhat receded and contracted, and partly by her dread of the operation.

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"I also (as Mr. F. expresses himself) am one of those who can see no safety in allowing the placenta to remain four hours, (or one) in case of an existing though not apparent hæmorrhage." If I had the slightest cause to suspect its existence, I should remove every thing which would impede the contraction of the uterus without hesitation, and whether I suspected it or not, I should not, as Mr. F. *pleasantly* supposes, "sit pulling the cord," thereby increasing or perhaps causing the evil I wish to avoid. In the case in question, I gently strained the funis five or six times in the course of the four hours (for about so often the pains occurred) in order to ascertain whether contraction (indicated by pain) had at all furthered the expulsion of the placenta. Mr. F. may probably be a greater adept at pulling a cord than myself, for he seems to have rung round the changes merrily on me and Mr. Marson; I leave others to determine with how much judgment.

I shall only add, that the arguments of Mr. F. are not at all calculated to convince me of any impropriety of conduct in this particular, and that if a similar case should occur in my practice, attended with like circumstances, I should, notwithstanding the plausibility of his reasoning, act in just the same manner without dreading the result.

I am, &c.

Nailsworth, Gloucestershire,
April 10, 1804.

O. W. BARTLEY.

To the Editors of the Medical and Physical Journal.

GENTLEMEN,

SINCE I first applied myself to the study of Medicine, I have been accustomed to note, in a kind of Common-Place-Book, such ideas and observations as I conceived to be new and peculiar to myself, and likely to prove interesting in their consequences; consisting chiefly of projects and speculations, tending to the improvement of practical Medicine. I review them periodically, and expunge such as further reading or conversation teach me to be unimportant, or to have occurred previously to another. A few remain, which, if you think them worthy of public notice, I offer for insertion in your very valuable Journal. I could name not a few instances, in which; from a reference to dates, I see clearly that I might have claimed

claimed to myself the full and uncontested merit of having first thought on projects, which have proved to others a source of very favourable reputation; but my speculations were confined to my Note-Book, and I have no reason to complain. Some of my projects may, possibly, have already occurred to others, may have been published perhaps; I shall not, be assured, in any one case, knowingly arrogate to myself the property of another. My communications, indeed, (for I mean, with your permission, to occupy a page or two of your interesting publication occasionally) will not, I fear, be such as medical men would choose to acknowledge, or of which they would think it worth while to dispute the possession.—Once for all, however, I commit to your hands the full power of withholding such part of them as you may deem either not new, or not sufficiently interesting for publication.

Should it accord with the Plan you have proposed to yourselves for the conduct of the Medical and Physical Journal, to admit anonymous communications of this nature, I am not without hopes that others, possessed of more talent and experience than myself, may be induced, from time to time, to add to the Stock of

Medical Lucubrations and Speculations.

1. *Submersion in Hydrophobia.* Many years have elapsed since it was proposed to immerse a person, labouring under hydrophobia, in water, so as almost to drown him. I would go further, I would actually keep him under water until he should have ceased to move, until the entire of the functions seemed to be suspended; but I would have at hand all the modern resuscitative apparatus of the best kind, Galvanic troughs, an electrical machine, &c. to be employed as soon as the superintending physicians should think proper. Death might ensue, it is granted; but if I had the misfortune to suffer, in my own person, from *rabies canina,* I should, most certainly, wish to have this chance (such as it is) of recovery. Does any known mode of treatment present a better? We meet with some dreadful and desperate cases of tetanus and melancholia on record, in which it might have been excusable to try such an experiment.

2. *Inoculation of the Measles.* I am not altogether ignorant of what has been, heretofore, published on this subject; but I think that I see a new and a more certain source of morbillous virus. I would rub in, assiduously, on the breast, on the day just preceding that on which

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the eruptions would be expected to appear, a little of the unguent. antimon. tartarisat. in such manner that the pustules, excited hereby, might come forward and be blended with the exanthematous efflorescence of the measles I would inoculate with the fluid contained in these pustules. No harm could, I believe, ensue; and the party from whom the virus is procured, would, probably, be benefited by the irritation of the surface of the breast.*

3. *On the Extinction of the Small-Pox.* I have doubts how far it is advisable to attempt its utter extinction in this country, unless our continental neighbours, or, I should say, unless the entire of the inhabitants of the globe co-operate with us; since it is *possible*, however earnest and general may be our exertions to exterminate it, that it may shew itself again in this country in the course of forty, fifty, or sixty years hence; since it is established that the susceptibility of any contagious disease is in an inverse ratio to the frequency of exposure to its contagion; and since it is obvious, from the bills of mortality and the history of the small-pox, that the air of Great Britain has not been, at any one time from the first introduction of the small-pox among us, entirely free from its effluvia, to which we are all, unknowingly, every day exposed: I argue that, on the re-appearance of the small-pox in Great Britain, with the interval above supposed, the entire of the present generation may have acquired a new susceptibility; that these, who have had the Cow-pox, nay I would say, that those, who have actually had the small-pox, may not be exempt from its further ravages, under the above-mentioned circumstances. Have those persons, supposed to have had the small-pox *twice*, passed the intervals in places entirely, or in part, secluded from its effluvia, as *in the country*, or *at sea?* Need I adduce the case of the celebrated Genevese physician, Bonnet, in illustration of my argument? He had enjoyed considerable practice for nearly forty years, when he retired into the country. He had here passed about ten years, seldom, if ever, visiting the sick, when he was called to see a young man, ill of small-pox; he now took that disease, to which he was before exposed times innumerable with impunity. See Bibliot. German, vol. 3, Note, about the middle of the volume.

Bristol, April 10, 1804.

[To be continued.]

* This speculation appears to deserve attention; but if Dr. Blackburne's Theory (No. 57, p. 461) be true, the measles so produced will be attended with pustulary eruptions. ED.

To the Editors of the Medical and Physical Journal.

Gentlemen,

A Reader, not of the Faculty, will be much obliged to any gentleman who, in your Journal, will communicate the cause of the illness of a fine little boy, within a fortnight of two years of age, lost the beginning of January last.

Tuesday the 3d, he had gone down stairs by himself, clothed in a great coat against cold, to look for his breakfast, but soon returned without it. The morning was cold and a little frosty. The same morning, before nine o'clock, he ate a good breakfast as usual; but, about ten, he came to look for his mother, seemingly cold, and expressing pain, cold, or uneasiness, by a whine. He had previously discharged a considerable quantity of purgative, slimy sort of stool: from that time he was kept quiet and in the lap. At his dinner time he refused his usual pudding, and through the evening would take nothing but tea or drink. His sleep at night was very unquiet: some rhubarb in currant jelly was given to him; after which he seemed somewhat easier.

In the morning of Wednesday the 4th, a gentleman of the faculty saw him, and sent some saline mixture, calomel, and a blister, the size nearly of a man's hand, for his stomach. His stools had become greenish; the fever, during the day, awaked him with a start whenever he fell asleep, and the case was considered and treated as bilious. At night he moaned for hours, and was in a state of fever with scorching heat; the blister was on him and had risen. The dejections were still greener.

Thursday the fever was considerably abated. He slept much, seemingly comatose. His apothecary agreed to have a physician sent for, who came, but not till past the middle of the next day. He had taken nothing but a very little tea during his illness, and had become very weak, wasted, and emaciated, with sunken and hollow eyes.

Friday, three in the afternoon, the physician saw him, and observed his very laborious breathing, which happened then, but had been only occasional, and afterwards went off. His dejections being green, calomel was prescribed, and a blister for the inside of each leg above the ancle. His life was not expected. But,

Saturday morning, although during the preceding night the

the hiccough had been often heard, he seemed a little revived, and rather to enjoy gruel. Dejections were not quite so green; debility increased; his sleep, coma.

Sunday morning, about three o'clock, he was convulsed, seemingly with approaching death; and, after several fits, expired soon after six o'clock.

During most of his short illness, he continually rubbed his nose with his left hand. His habit previously to his illness had been rather plethoric; but he had been otherwise healthy and strong, excepting an occasional weakness when on his legs, from teeth, as was judged: he had sixteen perfectly out, and was then cutting the last four at each of the extremes of either jaw. He had no cough of any seeming consequence, nor cold; unless it had been taken in the bowels the preceding Monday or Tuesday morning, by a sudden change of the weather from warm to frosty; or by some momentary and unobserved exposure to the cold air.

His diet had been plentiful, but not gross. No butter, very little meat, no beer; very little good port wine, occasionally.

The weather had for some weeks prevented his being much taken out, but he was not confined to warm rooms; ran about a hall with the door open; and, when fine and clear enough, upon a gravel walk in a garden.

An answer to this case by any Correspondent, or a reference to any book or treatise, *De præcipuis prope biennium infantum, morbis, & eorum causis,* will much oblige,

April 10, 1804. ACADEMICUS.

CRITICAL ANALYSIS
OF THE
RECENT PUBLICATIONS
ON THE
DIFFERENT BRANCHES OF PHYSIC, SURGERY, AND MEDICAL PHILOSOPHY.

Researches into the Properties of Spring Water, with Medical Cautions (illustrated by Cases) against the Use of Lead in the Construction of Pumps, Water Pipes, Cisterns, &c. by WILLIAM LAMBE, M.D. *late Fellow of St. John's College, Cambridge.* London, pp. 204.

THE main object of the author in this Research is, to spread an alarm (if well founded, a very wholesome alarm) of the deleterious properties

properties of all kinds of water in common use, when kept even in slight contact with lead. It may be considered as extending the cautions relating to this noxious metal so admirably laid down by Sir G. Baker, by Dr. Heberden, and some other sagacious physicians; but Dr. Lambe carries his enquiries to a much greater extent than has hitherto been done, and his cautions implicate the prudence of almost every individual domestic economy in the supply of that most important of all necessaries of life, water.

"Have we any reason to think," the author asks, "that this fluid can receive a contamination from the substances with which it is frequently brought into contact? Of all these substances LEAD is that which is most commonly used, and is preferred to other metals, on account of its cheapness, the ease with which it fuses, and its great ductility, fitting it to be readily moulded into convenient forms. But these advantages may be esteemed rather to be a public calamity, if the metal communicate to the fluid its own deleterious properties. The question then, whether water in its ordinary condition has a power of dissolving lead, is, from the frequent use which is made of it, of the first importance to society.

"The general practice of the country seems to have decided this question in the negative. Whatever may be the suspicions of some, they have not been sufficiently strong to produce much effect on the public mind, nor scarcely any influence on our domestic arrangements. Many towns are principally supplied by water conveyed from a distance by leaden pipes; families preserve it in cisterns formed of lead; some public breweries, I am told, have similar cisterns on a large scale, in which the water is allowed to stagnate; pumps so formed are put down every day, in every situation, and in all sorts of wells; and I know not that any one asks the question, whether or not, by these arts, a large portion of the public is daily and hourly consuming a quantity of the most virulent and insidious poison."

The subject involves several important questions, and the author very properly considers the evidences of disease being produced solely by certain waters contaminated by lead, the diagnostic symptoms of this disease in different constitutions, and especially the proofs afforded by chemical examination of the existence of lead in these suspected situations.

The latter question furnishes the principal original matter in this volume. After giving a slight sketch of the *colica pictonum*, and the modifications of the poison of lead in different constitutions, the author observes, that it will naturally be asked, "If leaden machinery for conveying water is really so mischievous as is supposed, how happens it that the saturnine colic is not common over the whole kingdom, and endemial in those places, where this machinery is in common use? The objection is certainly so far well founded, that it must be acknowledged, that the saturnine colic, though probably much more frequent than is commonly supposed, is but of

of rare occurrence, nor are even the pains of the bowels, which participate of its nature, by any means frequent, regard being had to the great number of persons, who are in the daily habit of using such waters.

"There are two reasons which may be given for this fact. The first is the minuteness of the dose. In my assay of a water, which I suspect to contain much more lead than is common, I calculate that the quantity dissolved is little more than a tenth of that which has been said to be contained in wine adulterated by litharge.

"A second obstacle, and one which is perhaps still more powerful, is the peculiar manner in which the metal is combined, as it is found in these solutions. This is not the place to enter at large upon this subject: it is enough at present to observe, that it is involved more or less completely in all of these waters with a matter, which seems to be of a vegetable nature. This union is in many cases so perfect, as to require the application of powerful chemical agents to dissolve the combination, and exhibit it under its common forms and relations. Thus it would appear, that the stomach and intestines are defended from its immediate action, in some cases totally, in all partially; and thus are the pains and spasms, which are the consequences of this immediate action, prevented."

Pursuing this idea of the very gradual introduction of this poison, he observes on the permanence of the symptoms, "the diseases engendered by lead seem to be in their nature lingering and chronical. In cases where preparations of this metal have been given as a medicine, and its use continued but a very short time, it has been known to occasion a disease of such obstinacy, as to require a very considerable length of time for its removal. Thus, we are informed, that four grains of cerussa acetata, taken for no longer a time than three successive days, "occasioned intolerable uneasiness in the bowels for some months." It is a commonly received opinion, founded, I believe, on actual observation, that the longer the force of this poison has been accumulating before producing evident disease, the more dangerous has been the disease when produced, and the longer has been the time required for its effects to wear off. This is known to be the law observed, when it has occasioned saturnine colic, and in this instance we may safely confide in analogical reasoning, though the symptoms be anomalous. As in disease from poisoned waters, the evident mischief is much more slow and gradual than in all others, that have been hitherto noticed, the same law may be expected to hold good in a still higher degree. Accordingly, in the instances which have occurred to myself, the restoration to health has been very gradual: three or four months have been required, before a considerable amendment has taken place; a twelvemonth or more, before the complete re-establishment of the health."

Several cases are given of obstinate and in a few instances fatal diseases, which the author ascribes to this metal; some of these cases do not appear altogether satisfactory. The medical part concludes

cludes with the following recapitulation: "Such is the result of my own experience, and of a few authentic facts which have come within my knowledge. I think it established by these observations, that the solutions of lead by spring water are sufficiently powerful to excite every one of those symptoms, which are allowed, by the first medical authorities, to be the genuine and specific offspring of this poison. These are the peculiar and excessive pains of the stomach and intestines, severe muscular pains principally seated in the fore arms, and the paralytic weakness of the limbs, particularly of the hands and arms. Besides these, some other forms of disease have, I hope, been fully and satisfactorily traced to the same exciting cause. Some of these must as yet be deemed anomalous, as not being received into the established classes of systematic writers.

"I cannot but conclude, that lead ought never to be brought into permanent contact with water, which is intended in any form to be received into the human body.

"I might adduce very many other instances of disease, which I believe either to have originated, or to have been greatly aggravated by the same cause. I am particularly convinced that it gives a strong disposition to apoplexy. Many paralytic tremors, obstinate constipations, perpetual vomitings, tympanies, tumors of the abdomen in females, glandular swellings and schirrosities, have I believed to have been so caused, exasperated, or rendered fatal."

The author concludes with giving the chemical experiments which have enabled him, as he supposes, to detect lead in minuter proportions than any hitherto known method has been able to do.

The common test for this metal is sulphuret of potash, or water impregnated with sulphurated hydrogen gas. These tests, added to an extremely weak solution of lead, turn it first brown, then black, and by repose a dark sediment subsides. The author asserts, however, that where the quantity of lead is too small to be indicated by the simple application of the test of sulphurated hydrogen, it may be detected in the manner described in the following passage: "In operating on these waters, I have distinctly noticed four different appearances.

"(A) The test forms a dark cloud with the precipitate, re-dissolved in nitric acid.

"(B) Though it forms no cloud, the precipitate itself becomes darkened by the test.

"(C) The test forms a white cloud, with the precipitate treated as in (A). These two last appearances may be united.

"(D) The test neither forms a cloud, nor darkens the precipitate.

"(E) In the cases (B, C, D,) heat the precipitate, in contact with an alkaline carbonate, to redness, dissolve out the carbonate by water, and treat the precipitate as in (A); then the test forms a dark cloud with the solution of the precipitate. In these experiments it is necessary that the acid used to re-dissolve the precipitate be not in excess; if it should so happen, the excess must be saturated,

before the test is applied. It is better to use so little, that some precipitate may remain undissolved."

Another way of using the test, which the author proposes, is to add muriate of soda to precipitate the lead in the form of a muriate, to heat this to redness with carbonate of soda, dissolve out the superfluous alkali, treat the residue first with nitric acid, and lastly with the sulphureous test.

A third method is by reduction of the metal, and certainly the most satisfactory, but inconvenient from the great bulk of water to be analysed in order to obtain sufficient lead to decide its identity.

With regard to the time necessary for giving spring water a sensible saturnine impregnation, when in contact with lead, the author thinks that a very few hours are sufficient, to judge by experiment.

Some other chemical observations are added, for which we must refer the reader to the work itself; we are compelled to add, however, that some very unsatisfactory inferences are given, and many of the author's experiments are too unfinished, and performed on too small quantities, to appear with that weight which the medical part of the volume required, and which perhaps their intrinsic value deserved.

The author has succeeded in making out a strong case for the public attention; and the specimen before us leads us to hope that he will consider himself engaged to pursue a subject which applies perhaps as extensively as any other single cause of disease, and in a form the most likely to elude suspicion.

Discourses on the Management of Infants, and the Treatment of their Diseases, written in a plain familiar Style, to render it intelligible and useful to all Mothers, and those who have the Management of Infants. By JOHN HERDMAN, M. D. Edinburgh.

THE first article in the sum total of every yearly bill of mortality must strike the most superficial observer with astonishment mixed with a degree of horror, *more than one fourth of the human race perish in the first year of life!* To what is this waste of human life to be ascribed? Is it a necessary part of the general plan of human reproduction? or is it owing to culpable negligence, mistaken notions, or ill directed care in the parents? The author in this popular address to mothers entirely adopts the latter opinion.

"Is it appointed, in the nature of things, that so great a proportion of mankind are born to die in infancy? No, the idea is impious, and directly arraigns the very Author of Being. He has formed them to live, and their premature death is none of his doing. It is owing to mistaken notions, and misguided reason; to a miserable and a total oversight of all the institutions and intentions of Nature, in regard to their treatment; to practices the most absurd and unfounded; in one word, to the most horrid and culpable mismanagement."

The author here speaks the truth, but not all the truth; that which

which he adduces as the cause of all this mortality, is only one of its causes, extensive indeed, but by no means so prominent as to be thus exclusively mentioned. Hereditary disease, or at least tendency to disease, defective stamina, absolute neglect and want of natural tenderness on the part of the parents, and many other causes conspire to produce this formidable sum total of destruction. However we shall not dwell any longer on this question, for the reader must be well aware that these are causes which no popular discourse like the present can ever reach; and the precise evil which the author opposes, is sufficiently extensive to excuse this partial exaggeration, if it can increase the force of the appeal. To those mothers therefore who eagerly wish to bestow every care upon their helpless offspring, even to those who are much more likely to *kill with kindness* (to use a popular phrase) than to injure by indifference and neglect, this appeal is addressed; and the importance of the subject gives an interest and dignity even to the minutest detail of the nursery.

The author begins his plans of reform by an attack on the matrons of the lying-in chamber.

"There is one thing in which you err, and that is, your implicit confidence in the judgment and opinions of your midwives and nurses. You allow and desire them to prescribe, not only for your infants, but also for yourselves. You take them out of their own sphere, and you dignify them with the office of the Physician. They are employed about they know not what, and they deal destruction around them.

"On the other hand, if you are willing to give them consequence, they are as willing to take it. They consider the management of you, and your infants, as their own peculiar province; they are jealous and fearful of the least interference; they give a profusion of advice, but they take none; they insinuate that it is they, and they only, that know any thing of the matter; they are wise in their own conceit, and their conceit and obstinacy are only equalled by their ignorance."

Having enlarged upon the incapacity and bigotted folly of the matronly counsellors, we are introduced to one whom the author looks up to with implicit confidence.

"But I must now tell you, that the fit and proper management of the infant state, is not to be found in experience alone. It is to be found in more sure and infallible grounds, than either experience or reason; it is to be found in the fixed and established laws of Nature; in laws which Nature has implanted in the breast of every living being, human or brute, and which are no less stable than the very foundations of the earth itself: in one word, the fit and proper management of the infant state, is to be found in the sure and unerring principle of *instinct*."

This has often been said, and in support of the all-sufficiency of instinct the example of inferior animals has constantly been adduced, whence the following inference:

" Thus, you may learn, that, in the general œconomy of life, reason is a frail and erring guide, and that instinct is a much more sure and certain director. Observe also, that those animals more immediately under the direction of man, as horses, cows, and other tamed animals, are much more subject to disease and death than wild animals, or the same species in the wild state. When left to the direction of their natural instincts, they enjoy uninterrupted health; but, subjugated to the caprice of man, they become partakers of his calamities."

However, it will always be answered to such general reasoning, that the customs of the society in which we live (whether right or wrong) have given rise to circumstances totally artificial, to which mere instinct can never apply: the domestic animals subservient to the use of mankind are themselves artificial; and it is only by thwarting many of their natural instincts that we can make them what we want.

But to proceed to particulars; for it is easy to say to parents, " your infants are subject to fatal diseases in exact proportion to the progress of your luxuries and supposed refinements;" the truly valuable secret of rearing children is to ensure vigorous health in the midst of these luxuries and refinements; and since, in such a state of society, the dictates of instinct will not suffice even for the management of the nursery, reason and experience must be called in to supply the deficiency.

The first custom which the author declaims against, is that of washing new-born children. The objection is at least original, we shall therefore give it in the author's words.

" The infant born, the first thing that engages the attention of the good woman in attendance, the midwife, or nurse, is the cleansing of his skin. This is reckoned a most necessary piece of duty, and much does he suffer by the operation.

" He suffers from no less than five causes, First, from exposure to cold. Secondly, from being tossed and tumbled about upon the nurse's knee. Thirdly, by friction by her rough and rude hands. Fourthly, from the nature of the cleansing substance. And fifthly, he suffers, and he suffers most severely, from the excoriations and inflammations which follow this officious cleansing of the skin.

" But, why should all these things be done? Why should the infant's skin be washed or cleansed with spirits, or wine, or ale, or butter, or pomatum, or soap and water, or plain water, or any other substance whatever? All these, and more, have been, at one time or another employed; yet, why should any one of them be employed? or, why should the infant's tender and delicate skin be subjected to such treatment? If there be any good reason why it should be done, let it be done; but, if there be not, let it be left undone.

" This coating or covering which the infant obtains in the womb is surely not put there for nothing. Be assured that Nature has some wise and necessary design or purpose in the matter; for it adheres,

heres, and it adheres most firmly to his skin: and, if left to itself, in a certain period after birth, it dries, and forms a crust, and gradually scales off in the œconomy of Nature, and leaves the skin it covered, heal and healthful, and capable to bear every common or necessary freedom.

"The parts of the infant's body most subject to excoriation and inflammation are the parts which come in contact with each other, where skin is applied to skin, as the neck, arm-pits, and groins. Now, on these parts, the natural coating, the covering which the infant obtains in the womb, is thicker than on almost any part else. Nature, conscious as it were of excoriation and inflammation in the neck, arm-pits, and groins, has provided against these ills, yet are her intentions frustrated by ignorant and officious care.

"But, suppose, if you please, that this covering of the infant's skin is intended for no purpose, suppose that it neither serves the purpose of warmth, nor defence, nor prevents fretting nor inflammation, yet why should it be removed? It is neither poisonous, pestilential, nor deadly; it will neither contaminate bed-clothes nor body-clothes, nor will it cause disease; it is as innocent as the infant it covers. As I have already told you, it dries, and forms a crust, and gradually scales off in the œconomy of Nature, and leaves the infant's skin heal and healthful, and capable to bear every common or necessary freedom.

"Disease, however, is a necessary consequence of its removal. It adheres, and it adheres most firmly to the proper skin. It is as it were a first skin, to be thrown off, in a certain period after birth, when the proper skin becomes fitted to perform its office, or to bear the action and contact of external things. It cannot be touched without injury. Nay, it adheres so firmly to the head, the neck, the arm-pits, and groins, that it cannot be removed without removing the skin itself. But the skin is injured by its removal in any degree; it is injured by the rubbing of the hand, and by the substance employed in its removal. These causes bring excoriations and inflammations and severe pain. Then comes the need of your drying and absorbing powders, your white lead, your tutty, and your burnt rags. By this officious cleansing of his skin, your midwives and nurses bring much suffering to the infant, and much trouble to themselves.

"What, then, have they to do? They have nothing to do but to take the infant's skin as Nature gives it them; nothing to do but to dry it, in the most kind and gentle manner, with the receiver, or a piece of old soft spongy cloth, warmed at the fire, and then proceed to clothe him."

Whether cleanliness be a natural instinct or an acquired habit, as it forms one of the best refinements and greatest decencies of civilized life, we should be sorry to see an iota of it given up to such an idle hypothesis. Let the author, if he pleases, exclaim against wine, ale, brandy, and chilling lotions; they are to be condemned, chiefly because they do not answer the purpose of clean-

 liness

liness so well as simple warm soap and water; and we are certain that there is not a decent lying-in chamber in the kingdom, in which such systematic want of neatness would not be heard with utter disgust and abhorrence. We fully believe that bodily purification, of herself and her offspring, is an universal *instinct* with the female sex, under such circumstances; and this extends to inferior animals, as will occur to every one who is acquainted with the process of birth, without our enlarging on a subject which, on no other occasion, we should have thought it seemly to introduce. With regard to the imagined injury done to the infant's skin, one would think, by the author's representation of it, that the poor child had undergone the operation of sand and a scrubbing-brush, and not a gentle friction with the nurse's soaped hand; which, rough as it may be, is gentler, and less excoriating than the finest damask towel.

Clothing is the next circumstance that engages the Author's attention, and calls forth his censures. Here, however, he is aware that he is not treading a new path; most of the absurdities and miserable consequences of the old system of swaddling and tight bandaging *have been* corrected, and all that is urged from the example of uncivilized nations for the benefit of ease and unconfined clothing, would have applied with much more propriety a century ago than to the present day. Beyond this single point the comparison will not hold; the Negroes, the Caffres, the Egyptians, whom the Author cites with so much approbation, have a very easy task to rear their children in a climate where all clothing is unnecessary, and is actually never put on till the age of puberty; where the new-born infant may bask naked in the sun, and sprawl about at pleasure on the warm sand. But what has this to do with the arduous task of nursing the child of the bleak and foggy North? the offspring of civilized society inheriting a delicate *town-bred* constitution, and from necessity immured in the confined streets of a populous city.

The following simple clothing is advised.

"On these principles, therefore, let the new-born infant be clothed in the following plain, simple, and easy manner. Let his head be covered with two caps, the first of flannel, and the second of cotton; and let the first be slightly stitched within the second, forming a lining to it as it were. Thus they may be both put on at once, and the uppermost may be tied loosely below the infant's chin. Then let his whole body, as well as his arms and legs, be covered with the finest cotton cloth, by way of shirt, made loose and easy, and to tie before; and then let him be wrapped in a fine, soft, and warm flannel wrapper, and laid to rest; laid into your own bosom, or into the bosom of a nurse."

In the usual dress of an infant a bandage is put round the belly, chiefly with a view of supporting the navel, and preventing umbilical protrusion. We are disposed to agree with the Author, that the idea of danger of rupture during the separation of the small

portion

portion of umbilical cord that is left, is entirely without foundation.

The feeding of the infant next engages the Author's attention. He mentions, with just reprobation, the many absurd ideas, and still more absurd practices, relative to the expulsion of the meconium by purgatives. Our readers need not be reminded, that the first stools of the healthy infant contain this thick brown matter called *meconium;* and that the first milk afforded by the mother has a gently purgative quality, which favours the expulsion of this peculiar matter from the infant's bowels.

The long retention of the meconium is generally allowed to disorder the infant, and hence the utility of early purgatives in those cases only where the child is debarred of its natural food. But the Author very properly objects to the common practice of cramming children as soon as born, and intended to suck their mother, alternately with unnatural physic and unnatural food, when the first element that Nature has provided for them is at the same time wholesome food and salutary physic. We know it is a mighty difficult task to persuade the good women, that a new-born child does not come into the world hungry, and the sole interpretation that they can give to its cries is food! food! food! Though the peculiarities of the fœtal circulation would not be so well understood in the nursery, every sensible mother must at least feel the force of the following appeal.

"Such are the effects of the artificial purgation of the infant; and such also are the effects of another practice to which he is subjected; I mean, the feeding him with wheys, panadas, and gruels, before he is applied to the breast.

"The source of your error is this. You think that the infant may starve before you are ready to give him the breast. But this is a vain thought, for he is in no danger of starvation; his blood is rich in nourishment, as it were; he had a constant supply till the moment of his birth; and this supply is fully sufficient for the purposes of his œconomy till the changes of his birth are effected; till his own organs, his stomach and bowels, are ready to digest and prepare his nourishment, and till you are ready to give him the breast. Besides, how can you suppose that Nature would leave a matter, so essential to the welfare, the preservation, and existence of the infant, so ill contrived? And pray what do the young of the inferior animals get before the mother's milk is ready for them? No one thing whatever; it is ready so soon as they require it, or so soon as they are ready to receive it.

"This is a universal law of Nature, a law which obtains with you, as well as with the inferior animals, that the milk of the mother is in preparation, and in readiness, at the very time her offspring require it, or are ready to receive it; or, in other words, the infant's necessity for food, and the mother's ability to supply it, exactly keep pace or correspond with each other."

The next subject is one in which the feelings of mothers are peculiarly

culiarly engaged, a subject which has often employed the pen both of the most eloquent and of the most experienced writers; it is, the duty and propriety of mothers giving suck to their own offspring. The very possibility that such a question should ever have been agitated, implies some great, some radical defect in the present state of society. The Author scarcely assumes the tone of the moralist, but merely that of the medical adviser; his object is not so much to persuade the wavering mother that she *ought* to devote herself to her child, as to convince her that she can do it safely, however delicate her own constitution may be, and that the health of her infant imperiously demands it. He thus addresses her.

"What, then, can prevent you from nursing, when you have not been mismanaged; when you fall into no disease; when the secretion of your milk takes place in the natural and ordinary course? Yet, even in this case, you frequently say that you have not a sufficiency of milk! or that it is so poor and thin, and not sufficiently nourishing!! or windy and unwholsome, causing disorder and disease in the stomach and bowels of the infant!!! On one or other of these grounds you either do not nurse at all, or you nurse, but feed the infant also with other substances; with panadas, gruels, &c.

"But let me ask, are you not a mother? Have you not nursed and nourished your infant in the womb? And have you not brought him into the world naturally and properly formed; a mature and a perfect infant? You have performed the one half and the first part of your duty, and you have performed it naturally and properly. Why, therefore, should you not perform the last part as well as the first? Are your fluids more scanty after the infant's birth than they were before it; or more poor, or more thin, or less nourishing, or less wholesome? In a word, have you suffered any change since the infant's birth; or have you fallen into any disease? If not, why should you not nurse and nourish your infant at the breast as well as in the womb? There is surely no one thing to prevent it, unless there be something wrong in the original formation of your breasts, or unless you want nipples.

"Even the milk of another woman is not a proper food for your infant; for it is foreign to his nature; it is not a product of the fluids by which he was formed and nourished in the womb. Some time has also elapsed since another woman's delivery. Her milk is not the milk of a woman newly delivered; it has undergone a change; it is not adapted to the digestive powers of the new-born infant; it is considerably indigestible in his stomach; it produces diseases in his stomach and bowels, and which disease continues till by habit his stomach acquires the power of digesting it; a power, however, which it may not acquire during the greater part of the period in which he is suckled."

From a popular appeal, like the present, general arguments and general applications can only be expected; otherwise, we might observe that however advantageous it might be to the health of the most

most delicate mother to suckle her infant, it does not necessarily follow that the child would receive equal benefit. When the author speaks of the nourishment within the womb, he seems to take it for granted that all children come into the world healthy and vigorous; but is it not fair to suppose that the slim, puny infant has *not* been duly nourished before birth? and that the first and most essential step to bring it into a thriving state is to substitute for its mother's, the nutritious fluids of a more vigorous nurse? In this we think we may confidently appeal to experience.

The management of temperature and exercise in the earliest months of infancy, and the time and mode of weaning, occupy the remainder of this little treatise. On the subject of exercise the following caution is given, which merits attention, as it often arises from anxious but mistaken care in the most tender mothers. It is the injurious practice of sending out very young infants in bleak ungenial weather, perhaps in intervals snatched between showers, to take the air in the arms of the nursery maid.

"But to send an infant abroad in the view of exercise is truly ridiculous; for where is the exercise of being carried motionless in a woman's arms? The exercise is to her, and not to the infant. By the exertion of walking, and of carrying the infant, the heat of her body is preserved, her feelings are kept agreeable, and she receives no injury; while the poor helpless innocent, motionless in her arms, is losing heat every moment; is starving alive as it were; is suffering all the pains and injurious effects of cold.

"Now, the difference between the woman who carries the infant, and the infant himself, must strike you. She can walk and exert her own muscles. By this power of action all the injurious effects of temperature are prevented, and she receives all the advantages and all the benefits of air and exercise. But the infant has no such power, and therefore cannot receive the true benefits of air and exercise till he acquires it; till he is able to walk and to exert his own muscles.

There is much good sense in this observation; it must strike every attentive observer who is constantly seeing the blue-cold, shivering, crying infant, paraded round the windy squares and open walks of this metropolis, in weather in which the grown up man quickens his pace and buttons up his great coat.

On the whole, we have perused this little treatise with pleasure and satisfaction; nothing indeed of importance is contained which is not found in Cadogan, Armstrong, and other guardians of infancy; the minutiæ of useful advice are almost entirely omitted, but the style is argumentative and the manner popular; and the mother, or future mother, that casts her eyes upon it, will not readily leave the perusal unfinished.

History of the Proceedings of the Committee appointed by the General Meeting of Apothecaries, Chemists, and Druggists in London, for the Purpose of obtaining Relief from the Hardships imposed on the Dealers in Medicine, by certain Clauses and Provisions contained in the New Medicine Act, passed June 3, 1802, together with a View of the Act, as it now stands, in its ameliorated State; to which are added, the Substance of every Clause in the Acts of June 3, 1802, and July 4, 1803, and the Clauses of both these Acts, collated with each other, consolidated and explained; also a copious and carefully arranged Schedule. With explanatory Notes and Observations, by WILLIAM CHAMBERLAINE, *Surgeon, Chairman of the Committee.* London.

THE observations of which this pamphlet is composed, have already appeared in different Numbers of the Tenth Volume of this Journal. Mr. C. has here collected them, and made the most important addition of the Schedule, in which the list of the taxable articles is given. Of this Mr. C. thus speaks:

"And as the Schedule is part of the Act itself, so, conceiving that the work would, in some measure, be incomplete without it, I have, in a copious and carefully arranged Schedule, faithfully enumerated every article inserted in the Schedules of both Acts of Parliament, wherein are clearly and distinctly shewn all the articles in each, now liable to the medicine duty; all those which were made liable by the former Act of 1802, but are now exempt; and those which, though omitted in the Schedule of 1803, may, under certain circumstances, be liable to the tax.

"This, it is conceived, may not only afford material information to Druggists; Apothecaries, who keep shops for retail practice; country dealers, many of whom embark largely in the drug trade, and also merchants who export drugs to foreign parts, but may also be found of some use to Magistrates, before whom informations may be brought under the Medicine Act, as pointing out, as far as my judgment enables me, every circumstance wherein conviction should or should not follow. If, as we are all liable to error, (and especially, in cases where a writer, ignorant of law, presumes to discuss a subject connected with the law of the land), any errors may be found, all such as may be pointed out, shall be thankfully acknowledged and carefully corrected in a future edition, provided the demand for the present work should shew it to be of sufficient importance to the public to make a future edition necessary."

The history of these proceedings exhibits great sagacity, zeal, and good sense in the Committee, and on the part of Government much polite attention and liberal concession. Every person concerned in the sale of medicines in general must acknowledge the equitable spirit which actuated the latter, and should feel highly thankful to the Committee for having relieved him from the

harrassing

harrasing uncertainty of the former law, and the unintentional oppression to which he was exposed in its execution.

To Mr. C. in particular, as a very active Chairman of the Committee, these thanks are especially due, and we doubt not will be generally felt, and willingly paid.

The Schedule is also curious, as it gives an authentic list of the most popular *shop* medicines in the kingdom, or those which are usually taken without the previous advice of a regular medical man.

An improved Method of treating Strictures in the Urethra; by THOMAS WHATELY, *Member of the Royal College of Surgeons, in London.* 8vo. pp. 230. London, 1804.

WE have on a former occasion (No. 27, p. 479, &c. and No. 28, p. 572, &c.) commended the zeal and industry of Mr. W. in improving the treatment of diseases of the urethra, and particularly his attention to safe and lenient means, in preference to the harsh, painful, and dangerous modes proposed by others. In the present work, which may be considered as a distinct treatise from the former on the same subject, the mildness and safety of the practice are carried much farther; probably, as far as they can be carried without becoming ineffectual or too tedious.

Mr. W. thus explains his own views. "The main design of the present work, is to recommend an improved method of treating strictures of the urethra. The public is already in possession of some remarks I made on Mr. Home's practice: but having seen, since their publication, additional objections to his method of treatment, the reader will find some further observations on it in the volume now before him. I should apprize him, however, that the animadversions contained in this treatise, relate entirely to what is advanced in his former volume on the subject: his second volume I did not see till these sheets were in the press. I observe that in this last work he has not attempted to refute any of the observations made upon his practice in my former essay; nor does he seem to pay much regard to the dreadful consequences so frequently produced by his mode of practice; but proceeds, without any material deviation from his former plan, by forcing a passage with a large armed bougie into the bladder. These consequences, in my opinion so pregnant with evil, are detailed, as in his former volume, with an indifference which might lead to the supposition that they are the unavoidable effects of the most judicious mode of treatment. I have differed from him in sentiment, and an imperious sense of duty to the public compels me to avow it. I have discharged that duty; and "I am very well satisfied," to adopt the language of Mr. Home, "that the public should judge between us by an impartial consideration of our works."

The first chapter is devoted to a general view of the subject; the different degrees or kinds of stricture; the usual causes, symptoms, and

and consequences of stricture, and a description of the proper bougies.

The second chapter contains the author's new improvement, which we shall give in his own words. "In the preceding pages I have endeavoured to show, that strictures of the urethra are not merely contracted fibres, but really diseased portions of the membrane lining that canal, with a continued disposition to increased contraction. In this view of the disease, it seems probable, that the application of a remedy, calculated both to remove the diseased affection, and to dilate the contracted part, might perfectly cure the complaint, without putting the patient to the inconvenience of wearing a bougie. Such a remedy is caustic, when judiciously used. Hitherto the lunar caustic has been chiefly employed for this purpose, and my former work upon this subject will show the high opinion I entertain of this remedy, in the various diseases in which it is employed. It has, however, been my good fortune, to discover a more efficacious, and, at the same time, a less painful and hazardous remedy for the disease in question. This valuable remedy is the kali purum, which, if used in the manner, and with the precautions shortly to be described, will be found of singular efficacy in removing the complaint. I have already had so much experience of it, and am so perfectly convinced of it's superiority over the lunar caustic, as well as over the common bougie, that I now use it in a considerable number of the cases that come under my care. Of it's safety I am as well convinced as of it's efficacy; for, if used with circumspection, experience shows there is little danger of it's producing any disagreeable effect.

"Before a caustic of any kind is applied to a diseased surface, care should be taken, that the state of the parts, and the habit of the patient, are such as to warrant it's application. In almost every instance in which it is applied with these precautions, the benefit expected to be derived from it will accrue, without any risk whatever, and with much less pain than might be expected from a remedy of this nature. But if, on the contrary, these precautions be not taken; if the caustic be applied while the parts are in a highly inflamed or irritable state, or tending to gangrene; if the habit be bad, and the patient very far advanced in years; we may expect the most mischievous effects from its application. Under such circumstances, the use of any kind of caustic, in strictures of the urethra, is dangerous in the extreme. By a little attention, however, it will be a very easy matter to distinguish the cases fit for the use of this remedy, from those which are not.

"If the patient be affected with fever, or any other acute disease; if he be much indisposed, indeed, from any cause; if, in particular, he have a gonorrhœa, attended with much inflammation and irritation in the urethra; if the prepuce, glans, or any part of the penis, or the parts adjoining to it be swelled and inflamed; if the urethra, and especially if the strictured part of it, be so irritable as not to bear the touch of a bougie, the use of caustic is, for the present, forbidden.

forbidden. Great caution should likewise be observed in applying this remedy to those who are far advanced in years. There are, indeed, many elderly persons, who bear this remedy well; yet good reasons might be assigned, why age alone should make us cautious in applying caustic. But supposing none of these objections to exist, the application of caustic should not be the first act of the practitioner, on discovering a stricture in the urethra: some previous steps should be taken, in order to insure the benefit which it is capable of affording, and that without giving unnecessary pain, or producing the serious consequences which frequently follow it's injudicious application."

Mr. W. next explains the "previous steps," which he does at considerable length, and in which he shews great skill, address, and humanity.

He then proceeds with his improved method: "Having shown that this kali purum caustic ought not to be applied to strictures of the urethra, till a bougie of a proper size can be passed into the bladder; having likewise pointed out the methods to be taken previous to it's application in different cases of stricture; and enumerated certain cases and circumstances, under which this valuable remedy is interdicted, I proceed to state that mode of removing the complaint in question, which it is the particular object of this treatise to recommend. Our first business is to instruct the young practitioner how to arm a bougie with this caustic. For this purpose, put a small quantity of kali purum upon a piece of strong paper, and break it with a hammer into small pieces, about the size of large and small pin's heads. In doing this, care should be taken not to reduce it to powder. Thus broken, it should be kept for use in a vial, closed with a ground stopper. The bougie should have a proper degree of curvature given to it, by drawing it several times between the finger and thumb of the left hand.

"Before the caustic is inserted into it, it will be necessary to ascertain the exact distance of the stricture, to which the caustic is to be applied, from the extremity of the penis. For this purpose, let the bougie (which should be just large enough to enter the stricture with some degree of tightness) be passed, in a gentle manner, into the urethra; and when the point of it stops at the stricture, which it almost always does before it will enter it, make a notch with the finger nail, on the upper or curved portion of the bougie without the urethra, exactly half an inch from the extremity of the penis. When the bougie is withdrawn, a small hole, about the sixteenth part of an inch deep, should be made at the extremity of it's rounded end. A large blanket pin, two inches and a half in length, with the head struck off, will answer the purpose; the hole being made with the point of the pin. The extremity of the bougie should then be made perfectly smooth with the finger and thumb, taking care that in doing this the hole in its centre be not closed. Some of the broken caustic should

then

then be put upon a piece of writing paper, and a piece less than half the size of the smallest pin's head should be selected; the particle, indeed, cannot be too small for the first application. Let this be inserted into the hole of the bougie with a pocket knife, spatula, or some such instrument; and pushed down into it with the blunt end of the pin, so as to sink the caustic a very little below the margin of the hole. To prevent the kali from coming out, the hole should then be contracted a little with the finger, and the remaining vacancy in it be filled up with hog's lard. This last substance will prevent the caustic from acting on the sound part of the urethra, as the bougie passes to the stricture. Let the bougie be oiled, when it is completely prepared for the office it has to perform. Then let the operator, without delay, pass it by a very gentle motion, with the curvature upwards, to the anterior part of the stricture, upon which the caustic is to be applied. In doing this, the end of the bougie, that is held by the finger and thumb, should be a good deal inclined towards the abdomen, on its first introduction into the urethra, in order to preserve the curvature of the bougie. After it has passed about five inches, this end should be gradually brought downwards, as the bougie passes on, till it forms a right angle with the body. It will be known when the bougie arrives at the stricture, by the resistance to it's progress felt by the hand of the operator.

(To be continued.)

Account of Diseases in an Eastern District of London, from March 20, to April 20, 1804.

ACUTE DISEASES.		Fluor Albus	12
Peripneumonia	3	Amenorrhœa	10
Catarrhus	4	Dysuria	5
Enteritis	5	Dyspepsia	4
Rheumatismus Acutus	3	Vertigo	3
CHRONIC DISEASES.		Cephalæa	9
Tussis	15	Rheumatismus Chronicus	12
Tussis cum Dyspnœa	16	PUERPERAL DISEASES.	
Hæmoptoe	4	Dolores post Partum	6
Phthisis Pulmonalis	3	Ephemera	7
Pleurodynia	2	Menorrhagia Lochialis	5
Hydrothorax	3	INFANTILE DISEASES.	
Hæmorrhois	2	Herpes	4
Hernia	1	Convulsio	3
Ascites	4	Dentitio	4
Menorrhagia	7	Spina Bifida	1

During the last few weeks there has been a considerable variety in the temperature of the atmosphere. At one time, a degree of heat was felt which is unusual at that season of

of the year; but since that time the degree of cold has been as remarkably severe. The N. and N. E. winds have prevailed, and their influence has extended over both the vegetable and animal kingdoms. The spring is late, and it is feared that some of the earlier crops of vegetables have been much injured if not entirely destroyed.

The influence of this state of the atmosphere upon the human frame has been very considerable. The severe cold succeeding the unusual degree of warmth has been productive of several acute diseases. Pneumonic complaints have been severe, and affections of the bowels of the acute species have been frequent, and in several instances have terminated fatally.

MEDICAL AND PHYSICAL INTELLIGENCE.

Mr. VAUQUELIN has communicated in a letter to Mr. Klaproth of Berlin, the discovery of a new metallic substance, which was found mixed with the platina sand. Being engaged in experiments on platina, M. Vauquelin, Fourcroy, and Descotels traced the new metal in the residuum, which remains after dissolving raw platina in nitro-muriatic acid, (aqua regia); it was found united with chromium and iron. The above mentioned residuum, which is equally insoluble in simple as well as compound acids, was treated with caustic kali, which, after ignition, was charged with acid of chromium, and the substance that remained insoluble had a dark green colour. On treating it with concentrated muriatic acid, it was for the most part dissolved; the solution appeared of a dark green colour. By thus continuing to treat the black residuum of platina alternately with kali and muriatic acid, they succeeded in entirely decomposing it, and separating it into chromium, iron, and the new metal. As far as it has hitherto been examined, it seems to be distinguished by the following properties.

1. Its solution in muriatic acid is generally green but sometimes blue, which depends on the proportion of the oxygen.

2. This blue or green solution, when heated to the seething point, is changed into a beautiful saturated red brown colour.

3. This colour disappears instantly by the addition of sulphat of iron, and the solution again becomes green.

4. Alkalis separate the oxyd from the green solution with a green colour, and from the brown solution with a brown colour.

5. The

5. The oxyd is easily reduced without the addition of a combustible body, and the metal is white, almost like platina, and malleable.

6. From this metal, when oxydated to a certain degree which is not yet ascertained, the solution of platina acquires the property of being precipitated by sal ammonia with a red colour, because on adding to a solution of pure platina which is precipitated by sal ammonia pale green, a certain portion of the solution of the new metal, it will be precipitated with a beautiful red colour. This is likewise proved in the following manner: On pouring to a solution of the red triple salt of platina an equal quantity of caustic kali, a flaky green precipitate is formed, which is not the case in the pale yellow solution of that metal. It seems as if the common proceedings employed for the purification of platina, are insufficient to separate the new metal, as it was still found in considerable quantity in the platina metal purified by Mess. Jeanetty and Neker de Saussure, at Paris. Besides the iron, the chromium, and the new metal, the platina sand contains also the Titan metal.

Dr. Keutsch has found that friction with oil is highly useful in curing fevers which are peculiar to the West India islands. It produces strong perspiration, and checks the vomiting. In some cases the effect of friction is rendered more efficacious by adding camphor to the oil.

Mr. Carpue will commence his Lectures on Anatomy and Surgery on Monday the 21st of May. Particulars may be known by applying to Mr. C. Leicester Square.

Dr. Kirby has in the press, and will shortly publish at Edinburgh, a pocket volume containing Tables of the Materia Medica. The object of these Tables is to present a comprehensive view of the most essential circumstances respecting each article received by the three British Colleges. These are classed according to their effects, and of each are given the systematic and officinal names, native place, part used, usual form of exhibition, doses, officinal preparations, and the cases to which it is applicable. To each class is annexed a select number of formulæ, written in the new nomenclature adapted by the Edinburgh College in the late edition of their Pharmacopeia, and to the whole is subjoined a tabular view of the earthy, alkaline, and metallic salts employed in medicine, exhibiting their solubility in water, their composition, and the substances which decompose them by single and double affinity.

To CORRESPONDENTS.

Communications are received from Dr. Moodie, Mr. Scott, Mr. Stott, Perscrutator, and a Student of Pharmacy.

ERRATUM.

Page 331, l. 24, for *Barlow* read *Bartley*.